

AVIATION WEEK

MARCH 14, 1949

A McGRAW-HILL PUBLICATION



L-M-Bartows on Salt Lake City's 6,830' N/S instrument runway, seen from the control tower. These are the latest controllable type providing 180,000 glare-free beam candlepower.

Now-Salt Lake City brings 'em in safely with

L-M-BARTOW

high intensity controllable beam runway lights

More Airports use "L-M—Bartow" than all other high intensity runway lighting systems combined

Boston • Chattanooga • Chicago
Indianapolis • Knoxville • Milwaukee
(International) • New York (LaGuardia)
Philadelphia International • Phoenix
Raleigh-Durham • St. Louis • Salt Lake City
Topeka • Worcester • Amsterdam
Brussels • Canton • Dublin
Hawau • Panama City
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L-M-Bartow High Intensity lighting is today installed at, and being ordered by, more airports than all other high intensity runway lighting systems combined.

L-M-Bartow's exclusive controllable beam makes it possible to use the very high intensity of 180,000 beam candlepower, without glare to the pilot. No wonder it cuts delays, stacking, and cancellations, and increases safety on take-off and landings. No wonder you find it at so many important airports, such as Salt Lake City. For details on lighting for large or small airports, phone or write Line Material Co., Airport Lighting Division, East Stroudsburg, Pa.



LINE MATERIAL Airport



YOU CAN BE SURE.. IF IT'S

Westinghouse



Airborne weight lifter with *Real Stamina*

A leading aircraft manufacturer sought a better cargo hoist unit to expedite the loading and unloading of planes—or to be used in a vital cargo carrying operation. Specifications called for explosion proofing, greater dependability and longer life than existing units.

Westinghouse was selected to do the job. The finished product, which meets these strenuous stiff requirements, is illustrated above. Here are some of its advanced features:

1. Newly developed brush motor that resists the extremely explosive-proof.
2. Twenty-four volt, specially-designed, d-c motor.
3. Speed limiter for close regulation of up and down speed.
4. Triple planetary gears for speed reduction.

In addition, the unit contains a carriage holding clutch and a magnetic lock for holding the load in case of power failure. Also, separate construction of brakes and counter-balancing device permits accurate "locking" of the hoist for handling critical loads.



Westinghouse



"Engine fire will start in 10 seconds"

Engine fires are no accidental occurrence at the Kiddie proving grounds! They're planned in advance, started by the buzzard, in a B-26 power plant—flamed instantly into a roaring blaze by the artificial ignition set up by the propeller of a second engine.

That's how we go about studying the speed and efficiency of fire-extinguishing agents—under conditions that closely

approximate actual flight. CO₂, NIB, CB, DL, the French—we've timed the fire-killing speed of them all with split-second accuracy.

That's just a part of Kiddie's research program—continuously carried on in the interests of safe flying. We're always ready to place the results of our research at the disposal of government agencies, aircraft manufacturers and transport companies.



The word "Kiddie" and the Kiddie seal are trademarks of Walter Kiddie & Company, Inc.

Kiddie

Walter Kiddie & Company, Inc. •

318 Main Street, Belleville 9, N. J.

A good place to land



... the airport that supplies dependable service
and products of recognized quality ... Texaco

Fliers prefer to use airports where they're made to feel welcome . . . where service is prompt and reliable . . . where lubricants and fuels are a trusted brand. Airports where Texaco Aviation Products are sold are like that.

Texaco Aircraft Engine Oil is a favorite with fliers everywhere. It keeps rigs free . . . maintains full power . . . assures fuel economy . . . permits extension of overhaul periods . . . assures real protection

against wear . . . materially reduces maintenance costs. Best proof of its quality is the fact that —

More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.

Texaco aviation lubricants and fuels are available at well equipped, well run airports — good places to land. The Texas Company, *Airline Division*, 135 East 42nd Street, New York 17, N. Y.



TEXACO Lubricants and Fuels
FOR THE AVIATION INDUSTRY

Page 16 — TEXACO STAR TRAILER presents *MATCH RIDE* every Wednesday night METROPOLITAN OPERA Broadcasts every Saturday afternoon

AVIATION WEEK, March 24, 1949

NEWS SIDELIGHTS

Tax Cut

Chances for having the 15 percent transportation tax reduced to its present level of 5 percent appear excellent.

House Republicans have unanimously endorsed this, and there is substantial support for it among Southern Democrats. A speaking of administration Democrats also favor the move, noting Rep. John Kennedy (D., Mass.) who has introduced a bill to repeal the wartime imposed levy.

Route Plan

Although honorably ideal, the Hoover Commission's proposal that the Secretary of Commerce map out an overall transportation route system is not given much weight as a practical suggestion. The route structure which largely "just grew" is already set.

Any basic change would clearly cut the Secretary's plan, and only influence comparatively minor route additions and changes.

Under the Hoover Commission plan the Secretary would present to the Congress a route system which the University of Michigan commented NACA "has had many years of meaningful operation as an independent agency." (This organization, problem, has not been sufficiently explored . . . to partly any definite recommendation as to its location in the structure of government. At least ten executive agencies are concerned with the research conducted"

Stiff Competition

Bankruptcy proceedings involving Panair International Airways have pointed up the financial difficulties of other Latin American flag lines attempting to break into transoceanic routes. U. S. carriers and Panair shareholders have nearly equal interests in PIA.

Officials of the foreign carriers are finding their governments have become reluctant to pour more money into them. They are seeking help from the "large subscriber" provided by the U. S. to Pan American Airways, Pan Am, Panagra, Changi & Seafarers and National.

The government-owned Venezuelan series Loses Aeropostal Venezuela (LAV), which operates Constellation from Caracas to Havana and New York, recently announced a thorough departmental reorganization in an attempt to reduce heavy losses.

Nearbybased Panair International Airways in Panama and the Panair government will extend financial

Hoover On Air

Hoover Commission's recommendations that National Advisory Committee for Aviation be placed in the Commerce Department is not expected to get far.

The military, as well as NACA staff and private aviation circles, are expected to oppose it. Under the Hoover Commission plan, Commerce Department would be composed of two divisional transportation services and an industrial and commercial service.

All non-regulatory government transportation activities would be lumped into the transportation sector, including all of the activities of the Civil Aeronautics Administration, safety enforcement functions of the Civil Aeronautics Board, and the NACA.

Differences from the Congressional transportation committee members may be resolved if the University of Michigan commented NACA "has had many years of meaningful operation as an independent agency" (this organization, problem, has not been sufficiently explored . . . to partly any definite recommendation as to its location in the structure of government. At least ten executive agencies are concerned with the research conducted"

Management, etc. for the efficiency of postwarbound industry, schedules, world wide communications network and accidentally Strategic Air Command's security system. B-52 can drift military job over a 10,000 mile range with only one refueling.

Airlift Scoreboard

Birds swift passed the million ton mark last month with a total of 1,014,545 tons delivered by U. S. and British planes during the first eight months of operations.

British planes have delivered 253,388 tons with the balance of 760,363 tons carried by USAF and Navy planes.

Record daily tonnages were delivered on Feb. 22 and 23 with 731,5 and 769,5 tons respectively. Total U. S. airlift can now run rates to \$19,701,500 including a transoceanic route. Total of 22 aircraft including 14 C-54s and 8 C-45s have been lost.

PRO Shifts

U. S. Air Force Public Relations Director Steve Lee has suddenly left top level authority in what amounts to a two way switch.

It brings Brig. Gen. A. Robert Venable back into the military deputy position by the retirement of Brig. Gen. George Schadlow, taken Col. RD Nichols from his job as director of information to become assistant commander to Lee, and takes Col. Ray Smith from executive to Gen. Vandenberg to Nichols' former post as director of air information.

More Transports

U. S. Air Force fiscal 1950 procurement program has a big share of transports but none of them will meet the requirement set by Sen. Bob Taft during the recent Senate Armed Services Committee hearings.

USAF will buy Convair C-121s for efficient military cargo plane. Fairchild C-119Gs, fast medium troop carrier aircrafts and Douglas C-124As to be utilized in heavy troop carrier squadrons operations.

Also in the fiscal 1950 picture are three military versions of Lockheed's Constitution. Conair is also scheduled to sell USAF new Constellations to the T-33 advanced two-engine trainers.

AVIATION WEEK, March 24, 1949



'ZERO BACKLASH'
and
SIMPLICITY
of the
TrimTrol
TRIM TAB ACTUATOR

... resulted in its adoption in the flight control systems of the following advanced aircraft:

	200-1	"ALBATROSS"
	FH-5	"BANSHEE"
	TC-12	"AVIAC"
INSTRUMENT		CHANCE VUGHT
RIFURIC		

Improvements in '49 models have been incorporated in all recent production developments.

***ZERO BACKLASH** at the output shaft thru Roll-on Ball Bearing drive. Two Ball Bearing bush in to meet the most severe requirements of Specification ARN-M-10c * Reduced weight * Increased Performance * Increased Brush Life * Infinitely adjustable limit switches and position transmitter accessible AFTER INSTALLATION * "Positioning" and synchronizing controls available without modification of envelope * Two basic models to suit space requirements.

WRITE TODAY FOR LITERATURE
ON THESE NEW '49 MODELS

AIRBORNE
ACCESSORIES CORPORATION
23 MONTGOMERY STREET - HILLSDALE, N. J.
Western Representative
JAMES S. ADAMS & CO. • LOS ANGELES 4

AVIATION CALENDAR

Mar. 14-16—Stratospheric air meeting; Princeton Center for Continuous Study University of Minnesota Minneapolis.

Mar. 15-16—Aerospace meeting; State and International, Hotel Statler, New York.

Mar. 16—Annual national aircraft project plan meeting; Hotel George Washington, New York City.

Mar. 16-18—AIRCRAFT DESIGN SEMINAR for aircraft design engineers.

Mar. 20-21—AFB Transport Area Annual Meeting; Hotel Statler, New York, and Hotel Congress, Phoenix, Arizona.

Mar. 21-24—Institute of Aeronautical and Space Engineers aerospace and air transport parts meeting; Hotel New Yorker, New York.

Apr. 13-16—NATIONAL INSTITUTE AND AIR TRANSPORT MEETING; Hotel Statler, Los Angeles, Calif.

Apr. 19-21—PIRA annual meeting of the Massachusetts Area; Edgewater Beach Hotel, Chicago.

Apr. 19-20—AIAA conference district meeting; Hotel Statler, Dallas, Tex.

Apr. 19-20—American Assoc. of Airport Executives convention; Oklahoma City.

Apr. 19-20—SACR (SACRED) AIRPORT SERVICE meeting; Hotel Ambassador, Atlanta.

May 3-6—Farmer University School of Aviation for Air Transportation; University of Tennessee, Knoxville, Tenn.

May 16-18—Flight Protection Assn convention on aviation and space; the protective falconer, Hotel Statler, New York City.

May 18-19—Annual meeting of the Massachusetts Area; Edgewater Beach Hotel, Chicago.

May 19-20—Annual national conference University of Michigan Aerospace Engineering Dept., Dearborn, Mich.

May 24-25—Second joint conference of FAS and AFCEA; Hotel Statler, New York City.

June 4-10—Annual Michigan Aviation week.

June 4-5—French national air fair and industrial exposition, Bourges, France.

June 23-24—AIAA aerospace paramet meeting; New York House, New York City.

PICTURE CREDITS

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From one end of the nation to the other, more truck users buy Chevrolet trucks than any other make. Chevrolet trucks offer more of what truck users want—more power combined with economy . . . more comfort and convenience . . . greater ease of handling . . . more value from start to finish. And to all these advantages you can add the biggest premium of all—3-WAY THRIFT! Here's the one truck that combines low cost operation, low cost upkeep and the lowest *Net* price in the entire truck field!

CHEVROLET MOTOR DIVISION • General Motors Corporation • DETROIT 2, MICHIGAN

Chevrolet Trucks alone have all these features

Chevrolet's 4-SPEED SYNCHRO-MESH TRANSMISSION offers smooth, quiet and easier gearshifts in Series 3500 and heavier-duty models. Faster shifting reduces gearshift speed and maximizes torque.

Chevrolet trucks have the famous GM THM "RELIABILITY"! Outside it's strong in load and off-road. Inside it's cool in cold weather.

Chevrolet's pre-pressured IDLERMASTER ENGINE provides improved drivability and efficiency in Series 3500 and 4000 models, as well as the world's greatest economy for its size!

Chevrolet Advance-Design brings you the FLEB-INSURANCE CAR,

confirmed on older age and road usage.

Chevrolet's REAR SWING AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

Uniflend, All Steel Cab Construction • Large, Divisible, Fully Adjustable Seats • All Round Visibility with Rear-Center Windshield • A Heavy Spring • Super Strength Frame • Full Width Approach Steps • Axles in the 3500 Series and Heavy-Duty Models • Spoolen Single Leaf Spring • Hydraulic Power Brakes in Series 3500 and 4000 Models • Standard Column or Floor Levers • Standard • Multiple Color Options • Steering and clutching service and maintenance included with the purchase of certain cars.

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

AVIATION WEEK, March 16, 1949

AT 45,000 FOOT ALTITUDE



New! MICRO
V3-1 Toggle Switch

This miniature aircraft toggle switch is a small, high capacity snap-action switch. It has been found valuable for such an application as pitot pressure. The switch measures only .475" diameter, weighs No. 1234-1 and 1234-2.

MICRO... first name in precision switches

For more than a decade the aviation industry has looked to MICRO SWITCH design engineers to supply the small, precision switches required and not available in existing needs.

This close cooperation has resulted in a continuing development of high capacity, precision switching components which have made a major contribution to the miniaturization of aircraft.

On the page are shown a number of such

MICRO SWITCH units, developed to meet specific needs, which have proved valuable in solving a number of design problems.

Airplane engineers are invited to make use of MICRO SWITCH "know-how" gained through long experience. We may have solved your problem for somebody else. Call a MICRO SWITCH engineer at one of the offices listed below - or write to us.



New! MICRO V3-1 Switch Housing

Rotary lever can be rotated clockwise through 360 degrees, and counterclockwise through 90 degrees in either direction. The cast aluminum housing for the small V3-1 Switch has two mounting holes for mounting on either face.



BRANCH OFFICES: Chicago • New York • Boston • Cleveland • Los Angeles

SALES REPRESENTATIVES: Portland • St. Louis • Dallas • Toronto



TELETYPE NUMBER 200-5000

NEWS DIGEST

DOMESTIC

Eight airlines which had proposed a \$1 surcharge on all tickets, dropped plan when other truck lines would not pass Airlines which had agreed to the fare increase, to be effective Mar. 15. American, Eastern, TWA, United and National, with Mat, Command, Delta, and Braniff proposing the surcharge on routes competitive with the other five.

NORTH AMERICAN Eddie jet fighter, builder of the world's shortest speed record, was named "Silver" by U.S. Air Force.

New passenger lift unit was set by Cessna Man, Medina-height News reporter, Wink. After it flew 222 passengers from San Diego to San Francisco (AVIATION WEEK, Mar. 7), plane flew the same 70-mile route with 269 aboard.

Dr. Philip M. Morse was named research director and deputy director of the Weapons System Evaluation Group by Defense Secretary Forrestal. The Group is the top level organization that studies tactical methods. Morse, professor of physics at the Massachusetts Institute of Technology, formerly was director of the Atomic Energy Commission's Brookhaven Laboratory.

FINANCIAL

Wright Aeronautical Corp. declined a first-quarter dividend of \$1.25 a share and did not declare a cash dividend, payable Mar. 28 to stockholders of record Mar. 17.

Boring Aerospace Co. declared a \$1 dividend payable Mar. 29 to stockholders of record Mar. 15. Last previous dividend, also \$1, was paid Apr. 7, 1948.

Lockheed Aircraft Corp. delivered \$25,500,000 worth of airplanes in 1948 and enhanced its profitable operations, President Robert E. Gross said. Year's total is not yet completed. Military deliveries in 1948 were valued at \$10,000,000, and commercial, \$12,500,000. Future totals are expected to be 95 percent higher. At year-end, Lockheed had \$14,500,000 worth of unexecuted business.

FOREIGN

Vancouver International Airport control tower and administration building were destroyed by fire of undetermined origin. Loss was estimated at \$115,000, with United Air Lines' and Trans-Canada Air Lines' leases totaling \$32,000, and Canadian Pacific Airlines' lessee at \$10,000. Temporary tower atop meteorological building prevents operations to continue. New building, at more accessible location, is expected to cost \$100,000.

INDUSTRY OBSERVER

• **Searle Aircraft Co., Seattle**, feels that its twin-engine Standard is not competitive with any U.S. plane now in production and is the only true DC-3 successor now being constructed; it is trying to interest a U.S. transport plane manufacturer in acquiring the rights to produce the Standard under license.

• **Chance-Vought's Corsair (XF7U-1)** is now being test flown at U.S. Air Force's Council AFB, Ft. Worth. The nose-gearing, low aspect ratio twin jet North Star has already significantly exceeded the world speed record of 670 mph set by a USAF North American F-86 Sabre.

• **U.S. Air Force** has not lost interest in the Northern Flying Wing design despite recent cancellation of an order for 31 B-47 jet-powered bombers. One of the 10 piston-powered B-58 built by Northrop will be converted to jet power with two Northern's turboshaft 30,000-hp turbo prop engines, and four General Electric J47 turbojet engines rated at 2000 h.p. to drive them each. Other B-17s will be converted to jet power. Aeroproducts division of General Motors is building the propellers for the turbowings.

• **Wright Aeronautical Corp.'s T-15** turboprop engine, originally selected for installation on Boeing's B-57 long range bomber, will not be put into production by the Air Force. Engine has been flying in a Boeing B-17 experimental installation. Navy is continuing development of the Allison T-40 and the Pratt & Whitney turboprop.

• **U.S. Air Force** is giving manufacturers some double talk on engines regarding status of the Boeing XB-35 project. Inside word is that USAF has quietly written out the program after it began to believe enough of money could not be obtained to keep the project alive. The XB-35 was awarded a basic design that looked much like the proposed XB-47 with ramjet engines instead of the XB-47's turbines. Meanwhile USAF is proceeding a switch to Boeing's XB-47 from turboprop to turbowpt power.

• **Air Materiel Command** still prefers high octane gasoline as the best gasoline for jet aircraft fuel. Kerosene with its higher辛烷值is unavailable in quantities needed and has dangerous explosive tendencies. And gasoline is still needed for rearming engine plasma guns.

• An eight lb. chlorine fed fire-fighting unit has been tested at Wright Field which has a total of 1,100 sq. ft. of chlorine gas. It is likely to be installed subsequently for 30 lb. cartridges for use in small aircraft.

• Replacement of crystals in VHF receivers by electro magnetic devices is being studied by Air Materiel Command's Electronics division, to overcome a shortage of crystals experienced in World War II when the crystals were drawn onto U.S. firm Reed.

• Contract for research and development in "the general field of nuclear reactor technology" has been awarded to North American Aviation, Inc., by the U.S. Atomic Energy Commission.

• **Panavia's** new all-metal version of the HPR-2 transport helicopter being built for the Navy and Marines has also attracted interest from the Air Force. USAF is considering the HPR-2 for strategic work since it has the capacity to evacuate air crews under the cover of a cyclone.

• **Cougar** reports that foreign and domestic airlines have now accepted 174 Douglas Liners. Latest crop on acceptance: American, 73 as an order of 75; Pan Am, 20; Western, 10; KLM, 12; Cathay, 5; Trans-Australia, 5; Swiss Air Lines, 4; CAAC of China, 3 as an order of 6; Sbarro, 1 as an order of 6; and Northeast Airlines, 1 as an order of 5.



UNHEALTHY APPROACH—Interception showing the B-36 nosing into the heavier F-4's lower tail boom, seen here in normal view.

Improved B-36 Is Planned by Strategists

Big bomber in top spot on Air Force program after performance exceeds estimates.

By Robert Host

Top U.S. Air Force strategists are counting on the Convair B-36 as the doomsday weapon of their intercontinental strategic bomber force for at least another six years.

Developmental progress now under way is aimed at improving performance of the B-36 series to a peak of 500 mph true air speed at an altitude of 50,000 ft. Present performance of the B-36s with full payload and 10,000-lb bombs is 372 mph true air speed at 49,000 ft.

► **Hot Poda:** Neck-down will be the B-36 (Aviation Week, Jan. 17) with four General Electric J47 turbojet engines rated at 30,000 lb. static thrust added to the present power of six Pratt & Whit-

ney R-3350-40 piston engines rated at 3,100 shp each. Sixty improvements made last week give the green light on the final increase of the 19 R-3350 plus modifications of all 134 planes to take the jet pods.

Convair has now built 58 of its original order for 91 planes and is averaging one complete bomber per week. Production plus modifications are expected to keep the Ft. Worth plant busy until the beginning of fiscal 1974.

An extensive modification program will include Readying up the wings of all planes to take jet pods, new type bomb bay doors, aircraft control surfaces, adding sensors to trigger up jet engine engines, the 22 model 46, and equipping every group of RB-36s for color photo reconnaissance.

► **Book Green:** The jet pods are designed to take two to three minutes to be attached to the B-36 wings in less than two hours. They will be used for all missions but are expected to boost the maximum takeoff gross to 190,000 lb. They will

provide certification of an addition

5100 miles on USAF performance.

Final certification of the 19 R-3350 plus

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AVIATION WEEK, March 14, 1969



HOW BOMBERS GROW—B-29 (background), the heavy hauler of World War II, is a swollen brother near the B-36 approach.

permit a larger fuel load on takeoff, a desire to keep the plane closer to altitude and speed increases at bombing altitudes. Addition of turboprops will reduce range by less than 500 miles.

Present big jet of the USAF is USAF plan is a sharp reversal from its previous partner role as an alleged "wing大象" and costly "white elephant" that was held in such low regard that sales were once seriously feared that never would succeed in causing the massive project.

The reduced shift has been due to two factors:

Airfield performance record of the B-36 types which have now accumulated a total of more than 5000 hours of actual flight time and have far exceeded original Convair performance guarantees.

► **Check of performance:** The record of deficiencies of jet fighters at the 40,000 ft. bombing altitude of the B-36. A series of test interceptions pitting the Lockheed F-104, Republic F-105 and the North American F-100A against the B-36 has indicated that the jet fighters are unable to make significant percentage of successful attacks on the bombers and never have been able to make an interception until after the bombers started en route and dropped their bombs.

These B-36 vs. jet fighters tests conducted over Florida and California have resulted in a thorough revision of USAF fighter plane requirements and have spurred the generally accepted doctrine that jet fighters development has given the defense a marked edge over piston engine bombers.

► **New Area-Kill:** In the present rate of the B-36 in its performance at 40,000 ft. and above, shifting the lighter bombers into the interceptors, as yet not used for all missions but are expected to boost the maximum takeoff gross to 190,000 lb. They will

be at altitudes of

40,000 ft.

above the

aircraft.

At altitudes of

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At altitudes of

mask and maneuvering speed of 225 mph, achieving a 5 percent climb rate.

The original B-36 design was the work of Convair engineers headed by Ralph Johnson and Robert Widmer. It was submitted to the Air Force in August, 1941.

Costliest for 100 B-36s at a total cost of \$160,778,000, not including government furnished equipment, was approved in August, 1945. This contract was cut back to 91 planes early in 1947 with cancellation of the entire program ordered later. Only the overall flight performance of the first B-36As to roll off the Convair line in the fall of 1947 overruled the cancellation and resurrected the B-36 project.

► **Fighter Stalls:** The low wing-loading of the B-36 makes it possible for it to outmaneuver the fighters, which have higher wing loading. Fighting aircraft can sustain very rapid turns and climbing speed at relatively low altitude.

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B-36 TEAM—T. W. Lason (left) and R. C. Schobell were key men in development of bomber. Schobell is now Convair chief engineer, while Lason succeeded him as chief engineer at Ft. Worth division.

Air Mail Appropriation Approved by House

The House last week approved \$45,184,000 for foreign air mail and \$41,773,000 for domestic air mail, plus \$10,000 for development work in the 1958 fiscal year Post Office Department appropriation bill.

This compares with estimated appropriations of \$58,360,000 for foreign air mail and \$30,710,952 for domestic air mail for the current fiscal year. Second Assistant Postmaster General Paul Aiken estimated that the coming-year allocation, based on estimates of last July, will fall short, and supplemental funds will have to be requested later. Other developments on air mail funds are Capitol Hill.

An appropriation of \$17 million for foreign airmail services for the current fiscal year was proposed by the House as a defense measure, now pending before the Senate. The \$17 million plus \$615,491 the Department has available for reutilization, would go to Pan American Airways (North Atlantic), \$3,562,776; Transocean Overseas (North Atlantic), \$3,291,013; Transoceanic and Western Air (North Atlantic), \$7,470,868; Colonial Airlines (New York-Bermuda), \$162,127; PAA (New York-Boston-Aveo), \$115,512; American Airlines (Panama-Mexico City), \$14,716; Eastern Airlines (Miami-San Juan), \$16,543; National Airlines (Miami-Havana), \$6913; Panagra (Peru), \$192,300.

* An additional \$20,906,680 was appropriated from the Senate by the President for foreign air mail payments to the deficiency estimates-\$1,481,600 for the 1949 fiscal year, \$21,623,000 for the 1948 fiscal year, \$4,172,000 for the 1947 fiscal year, and \$730,000 for the 1946 fiscal year. Of the total, \$20,828,718 is the amount CAR estimates will be required to meet air mail charges that are to be granted through Sept. 30 of this year.

* A deficiency appropriation for Alaska air mail State route service of \$176,000 for the 1948 fiscal year, \$329,500 for the 1947 fiscal year, and \$481,600 for the 1946 fiscal year, appropriated by CAR, also increases aircraft awards, was also requested by the President.

Academy—But Where?

President Truman's recommendation for the establishment of a National Air Academy has stepped up a big effort in Congress over its location.

Ten bills have been introduced authorizing an Air Academy at Randolph Field, Tex.; Salina, Kan.; "The Southern District" at California; Sedalia, Mo.; Keesler Air Force Base, Okla.; or the vicinity of Arkansas City, Kan.; Hutchinson, Kan.



Nonstop refueling technique which made nonstop route possible largely hangs on . . .

Globe Hop Sets B-50's New Role

Nonstop flight confirms claims that refueling puts all medium bombers in the intercontinental classification.

No stop round the world flight of a Boeing B-50 bomber using aerial refueling techniques had strong military political significance last week.

Air Secretary W. Stuart Symington's earlier statement on Feb. 28 that the B-50 could not be used for strategic bombing because of its lack of range.

► **239-Mph Average.** Two tankers were required to refuel the B-50, with a third tanker standing by during each refueling. A final two of B-50 tankers accompanied the Lucky Lady II on its final leg from Tijuana, Mex., to Ft. Worth but did not transfer fuel. Average ground speed for the entire trip was 219 mph.

Best indication of the significant military performance of the B-50 was given on the first two legs from Ft. Worth to Dhaka, W.Md., with initial takeoff load and use refueling over the Atlantic. The B-50 flew 1,919 statute miles and arrived over Dhaka with a fuel load good for 5 to 45 more. Subtracting 1,600 gal. of fuel to get the equivalent of a 10,000-lb. load would have left the B-50 with sufficient

completed its 21,652-mile flight in 94 hrs. 1 min., with four aerial refuelings (Aviation Week, Feb. 23) and a total gas consumption in excess of 54,000 gal. Aerial refueling was made by modified Boeing B-50 tankers over the Atlantic, Pacific, and Indian Oceans.

► **Wide Experience.** Two tankers were required to refuel the B-50, with a

third tanker standing by during each refueling. A final two of B-50 tankers accompanied the Lucky Lady II on its final leg from Tijuana, Mex., to Ft. Worth but did not transfer fuel. Average ground speed for the entire trip was 219 mph.

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the speedster for long or tall of B-50

fuel to complete 10,000 miles carrying the 10,000-lb. bomb load half way. The Lucky Lady II proved bomb bay fuel tanks and on board fuel.

► **Widely Experienced.** The Major Post-WWII major engine has turned smoothly during the entire 94-hour trip. Windham was excellent with only low levels of instrument flying during the entire trip. SAC headquarters maintained constant contact with the plane with hourly communications averaging 45 minutes for transmission of messages between LeMay and the transoceanic crews in Okinawa and the Lucky Lady II in flight. One of the last refueling contacts was made orally with the fourth and using an altitude selector switch. Refueling techniques were those described in detail in Aviation Week, Feb. 21.

The operation revealed that SAC now has B-50 under equations in operational service. The 32 tankers required for the round the world mission were in place at the Azores, Philippines, Clark AFB, and Hawaii less than 10 days after the operational order for the mission was received at their Tucson, Ariz., base.

► **199 On Order.** USAF now has 199 B-50s on order. All will be equipped with refueling davits. Testing of Seattle plant is now profiting them at the rate of about a dozen per month. The B-50 has a design gross weight of 140,000

Log of Lucky Lady II (Boeing B-50A)

	CST	Date	Miles	Elapsed Time	Average Speed
Depart Fort Worth	11:21 am	Feb. 26			
Air Assess	1:51 pm		3184	19:44	170 mph
Air Dhaka	1:58 pm	Feb. 27	3119	35:08	270
Air Philippines	7:00 pm	Feb. 28	16,179	35:38	241
Air Hawaii	9:05 pm	Mar. 1	19,667	79:54	241
Air Fort Worth	9:21 am	Mar. 2	21,452	94:01	231

leg, wingman of 141 ft. length of 99 ft. and is powered by four Pratt & Whitney R-4360 engines rated at 3000 hp. They spend about 385 mph.

B-50 features a buckled-up wrap B-50C is powered by a Pratt & Whitney WDT powerplant with greatly improved performance to the A and B models. The slender tail has been redesigned in

The B-50 spans only slight modification over the B model with performance remaining about the same.

The B-50 has a service ceiling of more than 30,000 ft. and a maximum load of 20,000 lb. Without refueling it can carry a 10,000-lb. bomb load over a 6000-mile range.

Johnson: Friend of Air Power

Incoming defense chief known for past support of aviation industry.

Appointment of Louis A. Johnson, Jr., of Cleveland, W. Va., as Secretary of National Defense to replace James V. Forrestal was generally lauded as another credit in improving more favorable consideration of air power in the defense department. Johnson will take office May 31.

Johnson resigned last week as a director of Consolidated Vultee Aircraft Corp. He has five of Steptoe and Johnson represents Steptoe Aircraft, Inc., Long Beach, Calif., with headquarters in San Antonio, Tex.

► **Wide Experience.** The new defense secretary has had extensive experience both in military status and aviation. He served as Army Secretary of War during the second Roosevelt administration from 1937-1940 and was especially active in the field of aircraft production in his capacity as chief of Army aircraft industry to meet the needs of Great Britain and France in addition to those of the U.S. Army Air Corps.

Johnson also made many speeches during this period during the war in defense of expanded air power in the national defense structure and was often referred to as a "warrior" for his strong stand on military preparedness.

► **Support Air Corps.** During the period Johnson also became involved in the controversy over the air cooled vs liquid cooled aircraft engine and was one of those responsible for development of American production of liquid cooled engines. He was also a leading



Louis A. Johnson

figure in the controversy over development of the Boeing B-52 Flying Fortress and committed the Air Corps planes to the need for long range bombers against future opposition by the Navy and Coast Guard elements or the War Department.

Johnson was also an outspoken advocate of industrial mobilization and began the first postwar step toward large-scale industrial participation in the defense programs several years before Pres. Harry S. Truman was a leading figure in development of the American Legion's postwar air power program.

Johnson served as national commander of the American Legion, and was President Roosevelt's special envoy to India in 1942.

More Powers Asked For Defense Secretary

President Truman last week asked Congress to increase the powers of the Secretary of Defense and tighten his control over the defense apparatus.

The President's recommendations, partially carrying out the proposals of the Congressional Government Organization, headed by former President Herbert Hoover, are:

- That the present authority of the Secretaries of Army, Navy, and Air Force to appeal to the President over the head of the Secretary of Defense be vested, and the three service Secretaries "admiralized" (that is, their department heads under the authority, direction and control of the Secretary of Defense).

• That the "National Military Establishment" be converted into an effective executive department known as the Department of Defense, with the Army, Navy, and Air Force "delegated as military departments" within the overall department.

• Secretary of Defense be provided with an Undersecretary of Defense and three assistant Secretaries. (The House Armed Services Committee has reported legislation creating an Undersecretary.)

• The Joint Chiefs of Staff be provided over by a chairman, reporting to the Secretary of Defense and the President, but including the regular 40 gen. rank-

who would "take precedence over all other military personnel."

• The Secretary of Defense be the sole representative of the Department of Defense on the National Security Council, the nation's top policy group, assigned the function of coordinating domestic civilian and military, and foreign programs.

The three service secretaries are now members of the council. Others are the

President, chairman of the National Security Resources Board, and other department heads so designated by the President. (The Armed Services Committee has approved a bill making the Vice President a member of the council.)

• Control of the Secretary of Defense over the Munitions Board and the Research and Development Board be tightened.

Odom Sets Lightplane Record

Second attempt in Bonanza at 5000-mile course from Honolulu to New York is completed in 36 hr., one min.

A friendly 25 mph wind blowing east out of Hawaii aided the California-based Odom's success and failure, for Capt. Bill Odom in his second attempt to fly a Beech Model 7000 Bonanza 5000 miles from Honolulu to New York.

The Bonanza, powered with a 165 hp Continental engine, had only 14 gal. of fuel left when it touched down at Teterboro Air Terminal, where Odom was greeted by Walter H. Bechtel, president of the aircraft company leasing his plane and a crowd of enthusiastic spectators.

Odom had started with 288 gal. of gasoline and 248 gal. in special aviation and wing tanks.

Flight was reported weighing 3779 lb. when he took off from the 3860 ft. airport near the 100th mile. The 3602 lb. was enough for the FAI plane weight category in which Odom was flying.

The achievement is expected to give Odom a clear world record in the FAI lightplane classification for nonstop flight. There were some unusual changes of the mother plane claimed in the same category by the Jan. 11 flight of 2468.9 miles from Honolulu to Oakland. Odom beat his record by two Europa standard lightplane flights.

On his first flight (Antarctic Wind, Jan. 24) Odom was forced back by strong headwinds after he had climbed to 14,000 ft over Raton, Nevada. Odom avoided weather trouble on his second flight by navigating southeast from Oakdale to a route across the Sierra Nevada mountains. His route took him across California and south through Oregon to Boise, Idaho at 1244 p.m. Mar. 7, to Rock Springs, Wyo. at 1335 p.m.; to Cheyenne, Neb. at 4:42 a.m. seven hours and fifteen minutes to Cleveland at 9:11 a.m.; across Pennsylvania, arriving over Scranton at 11:35 a.m. and arriving at Teterboro at 12:06 p.m. Mar. 8.

He had started from Honolulu at 12:05 a.m. Mar. 7.

Odom said a business test on the trip and deserved financial reward share as he passed over Cleveland in preparation for the welcoming ceremony at Teterboro.

Another Airlift

When the isolated coastal village of Neah Bay (extreme northwest corner of Washington state) was cut off from the outside by flood waters that washed out the only highway, Coast Guard PBYs took over the job of flying in supplies. They delivered more than 29,000 lb. of food, mail, supplies and equipment during a 10-day period.

STUDY IN TRIANGLES

The vertical view of the Convair Delta wing Model 7002 demonstrator in triangle configuration. Sweepback of the wing's leading edge to 60 deg is calculated to develop supersonic speed drag, but offers stability difficulties at low speed. This all metal Model 7002, powered by six Allison 340 turboprop engines, will be used only for low-speed (400-600 mph) stability tests (Aviation Week, Mar. 7).

stability difficulties at low speed. The all metal Model 7002, powered by six Allison 340 turboprop engines, will be used only for low-speed (400-600 mph) stability tests (Aviation Week, Mar. 7).

PRODUCTION



Apollo Turboprop Transport Nears Trials

Medium-range craft will carry 31 passengers and is Britain's first plane designed for new powerplant.

Britain's first commercial air plane, part specially designed for turboprop power, is awaiting completion at the Armstrong Whitworth, Coventry plant.

The Apollo will be powered by four Armstrong Siddeley Merlin II turboprops, has a gross weight of 39,780 lb., and will accommodate 31 passengers in 7500 ft. of flight in its passenger cabin. It is due to fly in about 18 months at 20,000 ft.

■ **Bristol Spear**—It is apparently designed to do the type of work now being done on U. S. aircraft by the Convair/Lancer and Martin 3-62, both of which have a slower speed but carry 40 passengers.

Basic specifications of the Apollo: 70 ft. length; 92 ft. wingspan; 960 sq. ft. wing area; maximum height 25 ft. It has a retractable tricycle landing gear with double wheels on nose and main units. Performance includes: takeoff in less than 90 ft; cruise 2700 ft. with a maximum gross of 39,500 lb.; range 2400 miles; altitude 20,000 ft.; stall air speed of 1500 miles per hour; 2100 ft. per minute climb at 20,000 ft.; 600 ft. per minute climb at 30,000 ft. for fast and slow, or three engines.

■ **Cake Details**—The canard was monocoque fuselage, has two forward baggage compartments, a main passenger cabin seating from 24 to 31 passengers in double seats on each side of a center aisle. Behind the passenger cabin are two lavatories, a galley, a cook unit, and a third freight compartment. Hind power is expected to boost performance slightly.

While the Westland-Sikorsky is very similar to the American original, it must pass the statutory tests for a British certificate of airworthiness before it is expected for new projects now being developed. Macmillan said that the Air Force decision was made after a series of trials and development periods with an eye toward the necessity of maintaining a supersonic flight program. Higher priority, he said, was given engine research for new projects now being developed. Macmillan said that the Air Force was completely satisfied with progress of gas turbine development with date at the Toledo plant.

These tests for commercial usage are nearly complete, and the certificats should be issued by the end of March. British military helicopters need no certificate, as do those to the Royal Navy, which is now in general equipment called for a test flight.

Both the Royal Navy and Pan Central, Ltd., one of several commercial companies interested in the Westland-Sikorsky, have had extensive experience with American-built 551s. The chief competitor at British European Airways also has used the U. S. craft.

Packard Plant Closes

Relocation of Air Force appropriations was cited as the reason for the recent closing of the Packard Motor Car engine plant at Toledo, Ohio. The shutdown came on April 1, 1948, at 5:30 p.m. The plant, owned by the British Overseas Aircraft division of Unidad Aeronautica, Ltd., and the British licensees for the British version of the 551, had been in operation since 1945 and had produced 475 engines and turbines.

There are no immediate plans for any of the 360,000 sq. ft. plant. British managers of the plant, Mr. Frank and Lester, president of General Wright Corp., stated that the Air Force decision was made after a series of trials and development periods with an eye toward the necessity of maintaining a supersonic flight program. Higher priority, he said, was given engine research for new projects now being developed. Macmillan said that the Air Force was completely satisfied with progress of gas turbine development with date at the Toledo plant.

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W. H. D. Coley - 1900



This is the year of the Thundercat

REPUBLIC AVIATION

1964-1970-1971-1972-1973-1974-1975- $\sqrt{[Hg]}$

ENGINEERING



OLD DESIGN: Curtiss NC-4's hull contributed only small part of craft's total drag. Progressive planform cleanup led to . . .

Research Review

New Hull Fineness Slashes Drag

Remarkable reduction in form resistance eliminates classic inequality, makes flying boat competitive with landplane.

By Robert McLaren

The age-old controversy between flying boat and landplane aerodynamics has assumed new importance in both military and commercial demands because for longer range and reduced operating costs.

The modern airplane has been pushed to such limits of efficiency that such formerly minor items as landing gear weight, takeoff run or maximum weight and range might lead to gone-weight art now predominant design consideration.

It is against a new framework of extremely high power and long range (24,000 kg., 25-knot Hughes Flying Boat, 21,000 kg., 16-knot Concorde D 55 had placed) that comparisons between the flying boat and landplane based on previous data are no longer valid.

The "slow, awkward" flying boat of power days has now been replaced by sleek, high performance designs that are competitive in the in-flight performance of landplanes, while retaining the classic advantage of unlimited water facilities.

► Two Types for Tests—Research engi-

neers have pursued the aerodynamic and hydrodynamic efficiency of flying boats by designing hulls that are longer and slimmer than previous shapes. Length/breadth ratio has been an important criterion of the efficiency of a flying boat design.

Two new Navy flying boats illustrate the improved hull form. The Martin XP5M-1 is slender flying and will serve as an important laboratory for tests to decide their use on later (and larger) models.

The Convair XP5Y-1 is now nearing completion at San Diego, Calif., and is a full-fledged tactical type intended for long range air search and antisubmarine warfare.

► Hull Drag: Small-increasing the length/breadth ratio (roughly comparable to the increase of a streamlined form as an aid to drag coefficient reduction) is not new, and engineers have long known that improved flight performance could result from reduced hull frontal area in proportion to total hull volume.¹

However, it was not until the mid-Thirties that the reduction in hull drag affected through induction in hull drag

began to assume substantial importance. For example, the drag of the Curtiss NC-4 hull (designed by Holden C. Hardesty and Jerome Clark Shultz), which was a particularly "clumsy" design, was only an infinitesimal part of the total drag of wings, tailfins, struts, wires, tail surfaces, hull, etc.

► Both Cleaned Up.—In the U.S. Navy flying boat program to develop the XP5M-1, the original monoplane configuration of the Convair PB4Y, the flying boat form was "cleaned up" and the drag of the hull became a progressively larger portion of the total drag until it constitutes as high as 25 percent in a recent modern design.²

That prior to the mid-Thirties, there was very little practical need for hull form as an aid to drag coefficient reduction is not true, and engineers have long known that improved flight performance could result from reduced hull frontal area in proportion to total hull volume.¹

However, it was not until the mid-Thirties that the reduction in hull drag affected through induction in hull drag

case at a time when the reduction of flying boat component drag had passed its initial stage. A survey in 1929 by the National Advisory Committee for Aeronautics revealed that the U.S. had only two flying boats, both of which were designed for ship model test work, before the appearance of the seaplane.³

It was at this time that this observer

saw that the NACA designed and built the first U.S. seaplane test boats, Convair hulls, in 1932. In 1933, it was completed the following year, and was deducted on May 27, 1933.

It was this important research that first initiated the various design variables comprising a flying boat hull, and renders flying boat design open much of its development to the late Stan Tranquill who supervised the work in this field for many years.

► Hull Drag Tested—Within a period of about five years, work in the NACA high-speed flying boat had developed fundamental criteria for flying boat hull form, and the basic hull shape characteristics, and it was only after this demonstration of required configuration that enabling design data could be developed.

After producing several flying boat hulls possessing required hydrodynamic characteristics had been completed, they were adopted in wind tunnel tests to determine their aerodynamic characteristics. The tests indicated that these hulls had about twice the drag of an equivalent seaplane form having the same frontal area.

► Wind Tunnel—These tests (1935)

would, using honest designed specimens for flying boat hull and complete boat research. A survey in 1929 by the National Advisory Committee for Aeronautics revealed that the U.S. had only two flying boats, both of which were designed for ship model test work, before the appearance of the seaplane.³

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A trial of revolution with a diameter of 7.22 and a maximum camber of 30 percent at 60 length was changed into a flying boat hull by the addition of a sharp, shallow fore-and-aft step and a pointed stern.

► Characteristics Complicated—Wind tunnel tests of the new hull form (both two were tested, differing only in depth) indicated that its drag was lower than any previously tested hull shape when compared on the basis of equal wetted surface area.

► Progress—Endeavor—Results of these NACA tests on two modifications of a streamlined form proved so encouraging that the program was considerably enlarged to include an entire family of hull forms derived from a solid of revolution with systematic changes in configurations to determine the exact point at which aerodynamic and hydrodynamic efficiencies were at a maximum.⁴

These trials, involving 26 separate hull forms, indicated that the drag of a hull possessing adequate hydrodynamic properties for use as a flying boat need not be more than about 25 percent greater than the basic streamlined form which it was adopted.

Again, the effect of increased length/breadth ratio was hidden in these data.

► Ratio Tested—Finally, in 1945, came the discovery that broke the drag and related length/breadth ratio at a "basic" design parameter for high efficiency flying boat hull design.



NEW DESIGN: Convair XP5Y-1 is clean, thin configuration. Thus, inducing of total drag via hull drag reduction becomes important.

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NACA researcher Bell, Gurnau and Zook, in an evaluation of available information on flying boat hull design, discovered that previous tests had increased the length of the hull while holding the beam constant, which, while actually producing an increased beam, had completely obscured the effect because of the resulting increase in the physical size of the hull.

For this reason, comparative data did not provide an indication of the effect of increasing the length/beam ratio with a given volume but merely compared a fixed beam ratio of a given basic with a larger hull of the same beam.

Ratio Imposition—Three models were designed with constant length/beam product but with length/beam ratios of 3.33, 4.56 and 7.64, covering the range of actual hulls then in use. To further length/beam ratio as much as possible, the models all used the same angle of dihedral, angle of forebody lead, angle of afterbody lead (tail), fuselage, the same wing planform, height at half and depth of step.

The hydrodynamic tests¹ proved that increased length/beam ratio gave higher speed and lower drag coefficient, better fuel/oil performance, and higher permissible load coefficients. The tests also revealed slightly higher drag at high speeds but this has been less found in many cases with length/beam product, which was constant in the tests reported.²

Thus, for the first time, the independent importance of length/beam ratio was demonstrated.

Climax Not Now—It was at about the same time that these comparative results were being obtained that one of the nation's foremost organizations of scientific research was discovering Fred Lanchester's simple concept of the Stalling Institute of Technology (now with the Navy Bureau of Aeronautical Research) of the moment³ of the discontinuous propulsive and lift forces of short 100 flying boat hulls and seaplane floats at the passing 25 points and concluded that designers had been steadily increasing hull length/beam ratios all along without knowing it.

By plotting total coefficient against length/beam ratio for these hulls and floats, Lanchester uncovered the fact that the ratio had increased with the coefficient in the relationship 8.65 times the cube root of the latter.

Actually, however, this gradual increase in length/beam ratio had been made to improve the hydrodynamic characteristics of the various designs rather than for aerodynamic reasons since a decrease in frontal area by a decrease in beam width can increase beam loading with attendant spray problems.

Criteria Obtained—It was to determine a correlation between hull dimensions and spray characteristics that NACA's John B. Parkinson prepared a study that indicated that the latter were a function of beam loading and hull length/beam ratio.⁴

This investigation developed the relationship

$$C_{\mu} = 0.003 \left(\frac{L}{B} \right)^2$$

in which C_{μ} is the gross load coefficient, equal to the gross load divided by 61 times the beam cubed, L length of hull, B beam in feet, and μ is the measure of spray characteristics. This formula reveals that the load coefficient varies with the square of the length/beam ratio.

Ratio Continued—Testing tests have indicated that there is a limit to the benefit of increasing length/beam ratio and that beyond this point the resistance increases. Tests⁵ conducted by the National Research Council of Canada have shown that the length/beam ratio of 15 is an optimum ratio, with even with this exceptionally high ratio the water resistance and roll-off time and distance of the model were approximately the same as for a conventional design with a ratio of 6.⁶

The spray characteristics were again correlated with acceptable range of ratios.

A more detailed investigation of the spray characteristics of this model, with length/beam ratio varying from 6 to 15, indicated that designers like to go to their high length/beam ratios without any fear of penalties spray characteristics.⁷ These latter tests clearly indicated that higher loads may be used on the high length/beam ratio hulls than on conventional ratio hulls without danger of penalties spray. Despite selecting the spray spray criterion of the equation stated on the page, it actually conservative.

Changes Permissible—Additional ratio of these models was made to determine the effect of such changes as depth at step, angle of sternpost lead and angle of sternpost as a high length/beam ratio hull. It was realized that not only does the high length/beam ratio hull possess important aerodynamic advantages without important compromises to hydrodynamic characteristics, but that the effect of variation is proportionate to the same on a hull with a ratio of 6.⁸

Further Drag Reductions—Having determined the basic advantage of higher length/beam ratio hulls, NACA conducted a series of tests to determine what further reductions in wave resistance could be made by simple "clean up" of the angles and corners of the hull form.

This was an approach to the problem directly opposite to the original. A rounded hull of revolution was deeply modified to produce a sharp

the product of beam and the square of the length cubed. NACA next returned to the wind tunnel to determine the exact importance of aero-dynamic drag affected by this variation.⁹

These ratio tests proved conclusively that an increase in length/beam ratios from 6 to 15 reduced the maximum drag coefficient 25 percent, a truly remarkable discovery and one establishing definitely the superior aerodynamic characteristics of high length/beam ratio hulls.

Tests Continued—Testing tests have indicated that there is a limit to the benefit of increasing length/beam ratio and that beyond this point the resistance increases. At a higher speed on the earlier iteration of maximum length/beam ratio, tests were conducted on a modified model of the XPB8-1 with a length/beam ratio of 15, an exceptionally high ratio, yet even with this exceptionally high ratio the water resistance and roll-off time and distance of the model were approximately the same as for a conventional design with a ratio of 6.¹⁰

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Flying boat design progression. Left: Convair PBY-1; Centre: Boeing 314; Right: Model of Boeing XPB2S-1 (midside view) used by NACA for series of tests of varying length/breadth ratio. Conformal fuel cells of 11.2 lbf model are depicted over range from 8 to 15.

two, half, these tests took the successful bill and made progressive modifications in the general direction of the body of resolution."

These studies revealed that the use of a more pointed bow with a chisel fished to conform more closely to the direction of airflow at the bow could reduce the drag 9 percent.

The use of a shallow transverse step in combination with an auxiliary long

radical step, believed to be hydrodynamically beneficial, reduced the drug 14 percent.

Taken together, the elimination of all sheep chases, the step, and the discontinuously caused by the footloose chase flare, reduced the ring of the bell about 30 percent over its original form.

These data pointed clearly towards

► Bush Now Competitive—Thus, after an 18-yr period of being beat half-dead, BUSH is now competitive.

moreover, to on which have been spent in a definitive program examining the merits of increased length/breadth ratios in decreasing aerodynamic drag and improving hydrodynamic characteristics of flying boat hulls. NASA has developed a complete usage of design data through the use of which the designs can realize vastly improved flying boat performance.

The practical value of this body of several data is seen in the fact that if the longitudinal ratio of a gun boat be doubled, the range of the resulting flying boat can be increased 28 percent, that without sacrifice in load volume (for storage, crew quarters, etc.) and with an improvement in takeoff distance and takeoff time.¹

Annually, this program can have



and of Boeing XPIII-1 (midplane view) used by NACA for series of tests of varying length/breadth ratios.



The Conference had set a limit of 11.3 km model run distance over time from 4 to 15.

wid importance in the military and commercial operation of long-range aircraft, and placed the flying boat in a par with the landplane for the first time in the former's favor.

References



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Matrix XPM 1 features improved ball flow. Craft will work for ball radios.

ADEL
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Excellence for handling
low viscosity fluids at
relatively high pressures
and low shaft speeds.

New Fire-Killer
Evaluated In Tests

More exacting requirements for fire extinguishing agents, imposed by larger, faster and more complex aircraft, have necessitated research and development in this field over the years.

It has become apparent that adequate fire protection employing carbon dioxide requires an undesirable weight penalty. Methyl bromide has long been recognized as an excellent extinguishing agent and permits considerable weight savings over comparable CO₂ installations—up to 25% in some or total system weight on large planes.

► **Research Indicated:** Recently, methyl bromide is highly toxic and corrosive. It was these characteristics that led Walter Kidde & Co., Belleville, N. J., pioneer manufacturer of aircraft fire extinguishers, to begin to consider research on a fire killer that would match the off-gassing of methyl bromide but not have that agent's toxicity and hence properties.

Data obtained in extensive tests, ran on a surplus B-17 engine set up and used as an engine testbed without modifications, indicate as an immediate possibility for an improved fire extinguishing agent, the German-developed C-8 minus the most deadly clause. As manufactured in this country, C-8 is probably just as good as methyl bromide.

► **New Agent:** Recently, it has been found that C-8 has fire-fighting power equal to that of methyl bromide when used in aircraft engine extinguishing systems.

Because C-8 has a higher specific gravity, approximately 12 to 12.5 percent more of the medium than methyl bromide can be stored in a container of given volume.

C-8 has been found to be less corrosive than methyl bromide. It attacks all materials attacked by methyl bromide, but to a lesser degree. Because of C-8's non-corrosive action on both agents, and both require cooling in closed systems.

Testing studies were beyond the scope of Kidde's test facilities, but two recent independent reports point the conclusion that C-8 is considerably less toxic than methyl bromide, somewhat more toxic than carbon tetrachloride.

It has also been determined that C-8 can be used with the same Kidde equipment as now used on aircraft for methyl bromide.

Further research is being pursued in the hope that plane manufacturers and fire protection equipment makers can, with disintermediation work, cut the present price of C-8 to be solved in the search for the ideal agent for extinguishing agents.

One detail still requiring some work,

DOUGLAS DC-6A



New 15 TON
Military Air Transport!



A usable volume of 5,600 cubic feet, more capacity than the largest bomber... a swift powered platform for easy loading... a cruising speed of 300 miles per hour—these features and many more point up the new Douglas DC-6A, Air Freightier—master ship of the giant Douglas DC-6 passenger transports.

When this new airplane disposed exclusively for carrying freight comes into service, it will open a new era in the logistics of military transport.

For example, the greater speed and payload of the new air freighter will enable it to do the work of two C-46s.

Large doors at each end of the DC-6A cabin afford maximum versatility in loading operations, since both loading and unloading can be performed

simultaneously. Also, the DC-6A incorporates a highly efficient cabin pressurizing and air conditioning system which permits full use of high altitude flight with no danger to perishable freight. Temperatures are held constant by thermostatic control whether plane is flying or on the ground.

Thus the outstanding performance of this new air freighter will make available to the military services a cargo transport capable of supplying world-wide bases and military operations of unprecedented scope.

As the new Douglas DC-6A takes to the air it will carry on the great record of the famous Douglas C-46, which completed more than 60,000 crossings of the Atlantic and Pacific during World War II and has made possible operation of the Berlin air lift.

Douglas Aircraft Company, Inc.

MORE FREIGHT FLIES MORE PLACES BY DOUGLASS



COMMON BASEMENT CONSTRUCTION
NO METAL-TO-METAL CONTACT
COPPER-FREE
CONTINUOUS OR
INTERMITTENT DUTY
AVAILABLE WITH OR
WITHOUT HYDRAULIC VALVE
EXCELLENT SELF-ADHERING
CHARACTERISTICS

A STAINLESS STEEL, HIGH-SILOVITIC, BORON-CHLORIDE, WATER-RELEASING
PIPE—Diameter 1/2 in. ID, 1/2 in. OD, 10 mils thick, 6.25 lbs./foot, 100 ft.

#16973



Up to 100
psi pressure

100% CAPACITY, 100% DURABILITY, 100% DIRECTION, 100% WATER-RELEASING
PIPE—Valve—Hydraulic, 1/2 in. ID, 1/2 in. OD, 10 mils thick, 6.25 lbs./foot, 100 ft.

#20358



Directional valve
with hydraulic
power assist

100% CAPACITY, 100% DURABILITY, 100% DIRECTION, 100% WATER-RELEASING
PIPE—Valve—Hydraulic, 1/2 in. ID, 1/2 in. OD, 10 mils thick, 6.25 lbs./foot, 100 ft.

#17976-2



Directional valve
for hydraulic
and turbine pumps

ADEL PUMPS INC., PRODUCTS CORP., ROBBINS, CALIF. 93070, U.S.A.

28 ENGINEERING

PLANE FAX

A page of service tips for private flyers and fixed-base operators.



How Palo Alto Airport Eliminates Stuck Rings, Valves and Bearing Failures

J. P. Nystrand, Superintendent of Maintenance of Palo Alto Airport, Inc., tells how "RPM" helps cut down expensive overhauls. He reports that "Since the first fixed year, after switching to RPM Aviation Oil, we have down approximately 15,000 hours with absolutely no stuck valves, rings or bearing failures."



Avoid oil on
tires whenever
possible

"We take better care of your plane!"

How parking cars extends tire life

If a wheel of your plane, when parked, is directly below the engine, it's a good idea to cover it to keep engine drippings off the tire. Some crafty flyers have inexpensive tire covers made for this purpose. Protect your tires from damage by oil—and use Astro Aircraft Tires for rugged, dependable service. For these famous tires have an extra "safety factor" and durability, thanks to special Astro engineering which produces the best for military planes. Your Standard Aviator Dealer can supply you with Astro Aircraft Tires now.



heat burns on the aircraft, fire extinguishing problems. This is improved compartmentalization of aircraft, to even fire the extinguishing agent to specific fire hazard and even from passengers and crew.

Tool Planning Brings Production Economies

Production costs at the Glenn L. Martin Co. are minimized through advanced tool planning by the company's master tool planning group.

When a new plane is to be produced, the master tool planner starts with the contract bid and the design, but identifies the equipment required during the contract. He maintains close contact with the engineering department throughout the various design stages to insure that the aircraft will be adaptable to economical construction.

In a report by John S. Mason, general supervisor of the master planning unit at Martin, it is pointed out that changes in production tooling not only are required to produce a new model aircraft, but also when a new contract calls for the same airplane in a different rate and quality.

Mason emphasized that parts often can be produced more economically with hand tooling, so the first cost would appear to be the cost of machine tools would be adverse. The number of parts to be produced usually determines which method is best.

An example of economy achieved by proper tooling methods, Mason cited the case of a large nose gear door in an early stage of design on a new can truck.

The planer recognized a difficult forming operation involved in producing a one-piece casting. He had the choice of forming it in one piece by hand, or in two pieces with simple tooling, but with an increase in assembly cost. Also, if in one piece, the job could be done with expensive forming tools.

His analysis determined at what quantity each of these methods would become economical. A compromise resulted with the decision to use the one-piece, hand-formed casting on the experimental model, with a change to the five-part casting on the anticipated production contract. This quantity will not great enough to justify expensive forming tools.

Mason pointed out that conventional production fixtures are designed into an airplane, not through the process of careful study of production tools as applied in other industries, but on tool designs specifically applied to the exact conditions peculiar to each new contract.



FOR YOUR CONVENIENCE...A COMPLETE SHERWIN-WILLIAMS COLOR LINE!

19 carefully selected colors—plus black and white—in the complete Sherwin-Williams Aircraft Color Line! And all of them are available in four types of finish: Open Pigmented Nitro-Dope, Open Pigmented Butane Dope, Open High Gloss Lacquer, and Synthetic High Gloss Enamel.

Offering color matches for most aircraft manufacturers' standards, the colors in the Sherwin-Williams line have been chosen for their purity, richness, clearness, brilliancy—and commanding durability. Pigments are pure attack colors, free from any tinting except where hue is lightened by addition of white.

In addition to this comprehensive color line, Sherwin-Williams offers other finishes for every aircraft and airport requirement. The Sherwin-Williams Co., Aircraft Division, Cleveland 1, Ohio. (Export Division, Newark, New Jersey.)

Products of Sherwin-Williams Industrial Research



SHERWIN-WILLIAMS
AIRCRAFT FINISHES

NEW AVIATION PRODUCTS

Anti-Icing Glass

Trans-Atlantic operators test effectiveness of current-heated windshield.

Two international airmen, one American and one Dutch, have been testing the newly developed New York anti-icing windshield made by the Pittsford Plate Glass Co.

The panels are made up of two laminated sheets of glass sandwiching a layer of plastic to add strength, with a thin coating of Neoprene capable of conducting an electric current. So much so that the two laminated strips embedded in each end of the windshield

allow the current impressed across the panel center to heat and de-icing the outer portion.

This has been evaluated during the past few months on scheduled air routes over the North Atlantic. And from our detailed panel and a burned out voltage booster, the task has been satisfactory. Frequently extremely severe icing conditions have been encountered, but in all cases the wind shield was kept clear.

Trans-Atlantic flights are experiencing principally no trouble with this installation. But at least one deutsche airline has experienced difficulties involving blow and deflection.

Several of the large aircraft manufacturers are continuing extensive evaluation tests of the New panel to determine whether it is the final answer to the vexing problem of windshield icing. —G.C.



Jet, Missile Insulation

Thermal insulation blanket for jet aircraft and guided missile, developed by John Masello, 22 H. Rock St.,

New York, 16, N. Y., is designed for application to jet engines, exhaust cones, booms, fairings, propellers, tanks, water or fuel tanks in hot areas, cabin air heating on inflation system heat exchangers, and for protection of structure and fuel storage tanks in guided missiles. Thicknesses begin at 1 in. and weight can be as low as 1 lb/H ft². It is Protection against fire from absorption of fuel, insulating air or hydraulic fluid is provided by fully coating the asbestos fiber at atmospheric 600-in. tension in stainless steel foil. Insulation is added to blanket to give flexibility and prevent conformance to curved surfaces. Graft (cold) rates at room temp., one percent per hour. Heat transfer coefficient is predicted by the much used of Mason (steel) which was normally increased during periodic exposure and annealing procedures.

The panels are made up of two laminated sheets of glass sandwiching a layer of plastic to add strength, with a thin coating of Neoprene capable of conducting an electric current. So much so that the two laminated strips embedded in each end of the windshield

allow the current impressed across the panel center to heat and de-icing the outer portion.



Facilitates Electrical Checking

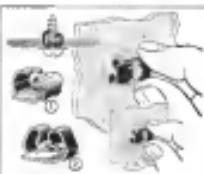
Portable tester, Model PA 516, made by Pacific Attaching Corp., 2540 N. Hollywood Way, Burbank, Calif., a triple purpose tool serving for aircraft electrical troubleshooting, aircraft maintenance, and heavy-duty battery checking. It may also be used as a d-c power source for radio service and accuracy test purposes. Power can be supplied to the plane through regular external power connection, or through portable supply connection at forward electrical coupling. Device is provided with thermal voltage control giving adjustment of charging current for batteries. It can handle relatively large number of batteries, since it has continuous rating of 200 amp at 28 Vdc. Low overall height facilitates movement around hangar and under airplane. Optional model is equipped with positive capture instead of electric motor drive.

For fast blind assembly of parts to metal panels, new expansion Speed Nuts are offered by Timemaster Products, Inc., 2875 Fulton Rd., Cleveland 1, Ohio. Units are inserted into square or round holes and parts are attached at placed in position and the screw driven. Nuts are self-locking and expand when tapping screw is inserted. Two basic designs are offered—self-tapping screws for metal-to-metal assembly, or serrated to a single metal flange and to the screw after being tapped.



Micro Hardness Tester

New tester announced by Kene Cliff Laboratories, Brooklyn, New York, applies dead weight load at light in 1 gram with either Knoop or Vickers type indicators for easy, accurate checking of minute particles, including, for instance, thin metals, thin-walled wires of wire, wire, foil, ceramic, glass, and plastics. Device is bench type instrument hand-operated to eliminate vibration. Adjustment of depth set, for controlling speed of load application and time of application, is supplied easily by ten progressive markings. Mechanical stage, consisting of laboratory plate, transfer plate and a precision dial, provides convenient means for positively positioning exact area of test specimen beneath indicator and scope.



Quick-Action Fasteners

For fast blind assembly of parts to metal panels, new expansion Speed Nuts are offered by Timemaster Products, Inc., 2875 Fulton Rd., Cleveland 1, Ohio. Units are inserted into square or round holes and parts are attached at placed in position and the screw driven. Nuts are self-locking and expand when tapping screw is inserted. Two basic designs are offered—self-tapping screws for metal-to-metal assembly, or serrated to a single metal flange and to the screw after being tapped.



"The newest thing in Helicopters"

... attains maximum strength and lightness with SHELBY Aircraft Tubing

The new Kansas Utility Helicopter, the K-150, which successfully passed its structural tests last year, is now ready for commercial use. This slender aircraft measures 15 ft 6 in. in length, is 10 ft wide, weighs 1,000 lbs., and has a maximum of a pilot-controlled servo lift at the nose blade which gives the most pronounced stability and maneuverability and response.

Designed to be used as a place of assembly and agricultural equipment, the K-150 features dependability of operation, simplicity of construction, and easy accessibility for maintenance. These desirable properties are ensured largely by the use of SHELBY Seamless Tubing throughout the fuselage, landing skids, landing gear, engine, and controls. All tubing (SAE 4140), chosen mildestly hard. Average weight 112 individual SHELBY Tubes are welded to form the basic fuselage structure.

It is because SHELBY Seamless Tubing keeps weight to the very minimum and yet ensures the greatest in ruggedness and strength that the K-150 has been designed to live for years and to appear at every type and every size. With no other form of construction can you build so strong, so light, and so durable as with seamless steel tubing.

The uniformity and dimensional accuracy of SHELBY Seamless Tubing allows to bend and shape to almost any form desired—in any welding position that permits complicated joints and processes with 100% efficiency, ensuring no loss of strength or economy. Call your distributor or engineer and get more information on applying U.S. Seamless Tubing to your design.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
Today's Greatest Product.
GENERAL CAGE COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTOR.
UNITED STATES STEEL CORPORATION, NEW YORK



SHELBY *Seamless* **AIRCRAFT TUBING**

UNITED STATES STEEL

Dividends Bolster Aircraft Shares

Recent disbursement actions of Douglas and other key manufacturers seem as improving investment status.

Supreme action of Douglas Aircraft Company in declaring a quarterly and special dividend now adds to an already favorable picture in the aircraft industry as well as improving the investment status of the industry as a whole.

The executive and specially disclosed record of the aircraft builders often has been viewed by investors at a major manifestation of lack of stability in the industry. Current Douglas actions tend to reflect this contention and may encourage other aircraft companies to follow the same course.

The aircraft industry, essentially a contracting business, does not have the regularity of operations common to car and appliance manufacturers whose sales and profits can be reasonably related to fixed factors of production. For this reason, aircraft manufacturers for the most part, even when operating at profitable levels, prefer to wait upon the completion of the year's results before taking any dividend share.

Moreover, the aircraft industry unfortunately has had two major peaks and valleys to measure a policy of regular distributions to stockholders.

► **Tangle Meantons**—Many of the airline industrial corporations deliberately pursue a course of making regular quarterly dividend payments at a level of high and stable returns. One of the more interesting illustrations of the sustained assistance interests render is to read their tangible numbers of the company's payout at regular intervals.

Stockholder relations in the aircraft industry have deteriorated with a well publicized option attempt last year in one instance.

While there has been no evidence at any stockholder threat or otherwise of consequence directed at the Douglas Management, such disbursements in the company's recent voluntary dividend schedule can not help but offend shareholders regard for the company's leadership.

► **Paid Policy**—For the time it aggregated its financial position, Douglas generally followed the course of making such disbursements toward the close of its fiscal period and as an annual base. The first payout was 55 cents a share paid in 1932. Upon the resump-

tion from the standpoint of consistency in earnings and dividends by 1935.

During the entire 15 years of its existence, Grumman has earned a profit in every year and has paid dividends in all sound periods. This is a unique record in the aircraft industry and would be noteworthy in any other industrial group as well.

Moreover, the record shows that since Grumman started its dividend rate, it has never been cut. In June, 1946, the company declared a \$100 per share dividend which increased total corporate assets available to 1 million. Based on the stock market price, dividends amounted to \$7 per share net and undivided, were equivalent to \$1.50 for 1947. \$1 for 1948 and 75 cents as ready for the preceding periods going back through 1941. Fixed earnings for 1948 amounted to \$2.70 per share.

With the company's backlog remaining at around \$150 million, there is reason to believe that earnings for 1949 may at least attain 1948 levels. The company currently paid a semiannual dividend of one dollar per share for 1948, much earlier in the year than had been anticipated.

► **C-W-M**—Recent changes in management of Curtis-Wright may be expected to re-explore dividends as a regular feature of past policies. The majority of stock held in the firm, however, dividends payable will be on a regular quarterly schedule. ► **Higher Profits**—Monogram, the second \$2.75 per share leader, is to begin the first half earnings for the fiscal year ended May 30, 1948, next month larger than previously anticipated. When the 1948 dividend payout was declared, the management indicated that such disbursement about equaled earnings.

The current annual dividend payout could indicate that no earnings for the fiscal year ended in late May, 1948, of \$2.75 per share, will be made in the 1948-49 period just continuing. Estimated earnings for the first half consist of last year's rate to best \$2.25 per share, which implies that all increments in the fourth quarter resulted in a material boost in final results.

Despite its active stand against dividends, Douglas continues in a healthy financial condition with a book value of about \$67 per share, net car and assets alone being estimated to exceed the current market price of around \$50 per share.

► **Some Annual Payments**—Many aircraft companies pursue a policy of making semiannual disbursements, when such payments are possible.

Convair, however, has shown a

tendency to follow the twice-yearly pattern without, but generally on a two-year basis. Northrop, Grumman, to pay the best record in the aircraft

industry from the standpoint of consistency in earnings and dividends by 1935.

AVIATION WORLD NEWS

Buenos Aires Letter

U. S. Lines Strong in Argentina

Braniff believed aiming at rich market now shared by PAA and Panagra as national lines languish.

BUENOS AIRES—The air transport picture in Latin America continues to be a healthy one as far as the U. S. air lines, Pan American and Braniff, are concerned. Some of the foreign airfares, however, are having trouble.

Pan American and Panagra appear generally good passenger loadings with the new "Argentina" and "Chilean" planes received in advanced stages. Pan American has also begun a "rush" service to Buenos Aires from New York at a \$120 round-trip.

► **PANAMA N. Y. Service**—The Argentine international service, FAMA, which suffered heavy losses last year in its route to Europe, has still not come forward with plans for the 1949 air service although six DC-3s are now in Buenos Aires ready to go.

Generally speaking, the national lines of the South American Republics have had a fairly good year and several of them have had a number of successes considerably. They do not include such successful domestic lines as Zonal, in Argentina, or Avianca, in Colombia.

The third U. S. airline to have made Latin American—Braniff—has organized its plan to extend its run from Lima, Peru, across the Andes to La Paz, Bolivia, and thence across the wide expanse of Brazil to Rio de Janeiro, the new terminal point. The report states Braniff is spending \$700,000 on new radio and emergency landing facilities, leaving little to make arrangements with Panagra for use of them.

► **Speedy Python**—Braniff will be able to offer a nonstop trip to Rio with an hour over the Andes and a nonstop to the jungles of Brazil. La Paz, at midway point from Lima to Rio, is the highest capital city in the world with an elevation of some 15,300 ft.

Braniff is believed to be still aiming at securing permission to fly into Buenos Aires, the newest, territorial power in South America. If Braniff hopes to break into the Latin American field to a big way, it will find it can only do so by getting a share of the busy contract commercial business existing between the largest city of South America and the large cities of North America.

As matters now stand, the route to the Argentine U. S. air agreement com-

petitors to carriers of another country. ► **Takes Refugio-Pan American and Panagra**, together with the big passenger shipping companies connecting the United States and Argentina, have had to place a strong ruling in effect. Braniff Air is subject to federal rules.

The new ruling is that no tickets will be issued to travel on the Pan American and Panagra routes.

This means that if a traveling American tourist is to have money sent him to the Pan American office and must to buy a ticket to New York, he will be charged.

► **The Many Reasons**—Reason for the ruling is that Pan American and the others have apparently become caught with an unusually large amount of Argentine peso which, until recently, the Argentine government controlled for them at the official rate. The govern- ments, however, by a desperate dollar shortage, no longer is providing such a currency exchange, so the airlines have had to buy their tickets also in pesos.

► **Argentina Wins**—Argentina, however, will have any such in- fluence over the Argentine government as it is used to have had in other cases. But Argentina is unlikely to place overly generous in handing out routes and be- cause it is often considered



Python-Powered Lancaster

LONDON—An experimental Lanchester aircraft aircraft fitted with two Armstrong Siddeley Python jet turbine propellers originated in the modified prototype built in the first test flight.

The Armstrong Siddeley Python is one of the world's largest jet turbine propeller engines and makes an interesting comparison with the 15,000 hp Rolls-Royce Merlin engine also used.

Designed for assault crossing of obstacles of 30,000 ft. and at speeds between 460 and 490 mph the Python propeller turbine has with a power output of 3670 chp plus 15% in thrust, a total of 4118 chp is one of the world's most powerful aero-engines.

► **Engines Modified**—Much development work has been done since the Python first ran and passed its acceptance test early in 1945. The design of the Python is based on principles which have been

more concerned with Armstrong Siddeley gas turbines. The placing of the air intakes well back from the spinner of the contra-rotating propellers has most effectively solved the problem of handling the huge volume of air which the engine consumes.

The Armstrong Siddeley Python is one of the world's largest jet turbine propeller engines and makes an interesting comparison with the 15,000 hp Rolls-Royce Merlin engine also used.

Aerospace Corp Test Institute	Max. dry weight	54.5 lbs
Length overall	56 ft	56 ft
Overall length	195 ft	195 ft
Overall width	115 ft	115 ft
Estimated installed weight including propellers	4100 lbs	4100 lbs

SALES & SERVICE



Newly styled 1949 Aerocra Sedan.



Lowest cost four-place Aerocra.

Diversified Output Aids Aerocra

Non-aircraft items help lightplane builder weather market slump; military contracts total \$1.5 million.

By Alexander McGuire

MIDDLETOWN, Ohio—Aerocra stands for diversified products in implements the current market demand for private aircraft is passing off for Aerocra Corp. As a result Aerocra has made less strides on the road to financial success.

The Middletown plane builder has had to cut back its airplane production at the end of World War II and was one of the two largest producers of non-military aircraft during the boom year of 1946.

Aerocra started a post-production at one time of over 1000 planes a month, and built 7433 planes that year.

Big Inventory.—Rapid drop in light plane sales which followed brought Aerocra with huge inventories of lumber, sheet and other components, some of which are still being used up.

Aerocra's only positive武器 is that in 1947 Aerocra sold 1218 planes, and in

military contracts on the books, and expected to get at least as much more new business this year.

"We are still an airplane company but we have a goal to keep full and productive, our obligation is to stick-blanks to meet," Lovell pointed out. "By getting these non-aerospace contracts we can keep our employees, technical staff and plant in business until the lightplane picture improves."

1949 Aerocra.—Aerocra's 1949 airplane line includes the five-place Aerocra Sedan with Continental C-145 engine, the Aerocra Champion tandem trainer, with 15 or 30 hp Continental engines optional, and the side-by-side two-place Club with 55 hp Continental.

Bill Rongos, Aerocra marketing sales manager, and Bob Wood, editor of *AEROMARINE WEEK*, were invited down from Detroit by Middletown to see the 1949 Aerocra Sedan, and then back to Dayton to see the 1948 Sedan allowing a chance to compare the relatively few changes which have been made.

New interior fittings and upholstery have been modified into quite attractive colors. The Sedan's original wing is painted the same, and the overall paint job is entirely.

\$300 More.—Priced at \$4975 flyaway Middletown, the 1949 Sedan costs \$300 more than the 1948 four-place. Other flyaway prices: Champion, \$3955 for 90 hp version and \$2495 for 85 hp version. Club, \$2855.

As of approximately Mar. 1, Aerocra had a backlog of 65 firm orders for planes, including 45 Sedans which are now being built. Aerocra plans to add two to three more planes a day to step up the rate to those of 60 to 80 Aerocras a day to five a day in May, if the expected demand continues.

With its present production last Aerocra estimates that it could build 1500 units, as eight planes a day.

Stress Programs.—President Lovell says Aerocra will 500 Sedans this year. He will be pleased, however, to note that he is more optimistic, as might be expected from the sales department, and estimates that Aerocra's production will increase about 100 percent. In 1948 Sedan sales topped 1935, yet over half the total Aerocra sales. It is pointed out that the Sedan was late in getting into production last year, and that the 1948 Sedan became very popular.

At the present planned flight rate, the Sedan has a good potential in the domestic market, since it has shown acceptable performance and is approximately \$7600 under the Ryan-Stinson Superliner, the newest four-place competitor.

It is estimated that approximately 25 percent of Aerocra Sedan sales in 1949 will be four-place.

Few Orders.—Only Lovell has the airplane sales on a cash-on-the-hand-

basis basis, holding planes as firm orders until deposit is made.

The company now has 43 distributors, and approximately 1400 dealers. The number of distributors has been sharply cut, and Aerocra expects the distributor to drop off a considerable number of the less active dealers. Lovell estimates last year's sales with number of dealers, so as to indicate that two many of the dealers are non-producers, and feels that a larger territory for each dealer might well lead to more as incentive to dealer activity.

He has no immediate plan to change the dealers' territories from his present basis, except for minor changes, and that a more detailed analysis of the various model and area in production convinces him that will be an advantage for the company and to be reflected in the engine.

Some of the major Aerocra non-airplane business consists for approximately \$750,000 for ground mobile trailers with the Oklahoma Department of Transportation standards for Boeing B-50s, amounting to approximately \$250,000, and smaller commercial mobile loading steps, a gas-changer unit, and bomb shackles. The Middletown plant was trying hard for a new USAF contract for a ground power unit to start jet flights, which would probably be the largest single chunk of government business at his disposal.

New Committee

Appointments of a coordinating committee on agricultural use of aircraft for California is being arranged by the California Aerocra Committee at request of aviation, agricultural and agricultural groups interested in this development. Committee will include representatives of aircraft manufacturers, flight operators, farmers, Sherman manufacturers, etc.

Arkansas Farm Planes

About 200 planes have been licensed in Arkansas for fertilizing, seedling and dusting crops, according to Gosselaar L. Moore, Arkansas coordinator of the Civil Aerocra Committee, Arkansas Department of Agriculture, Little Rock. They will be used annually in large except in January, February and December.

Advantages of planes in dusting, as seen by Arkansas farmers, include ability to operate when the ground is too wet for vehicles, and rapid coverage of crops, which often is urgent.

Most of the planes are converted Sherman trainers, but lighter planes will be used by some operators. One Texas operator is buying 23 planes into the state. These aircraft will be used for crop dusting.

BRIEFING FOR DEALERS & DISTRIBUTORS

AIRLIFT JUNIOR GRADE.—Washington State Aviation Assn. has placed a lightplane outfit for relief work in case of a repetition of last year's disastrous Columbia River floods. Since in the monsoon at heights above last year, and a sudden rise could precipitate a flood even worse than last year, it is repeated.

More than 300 planes, two-place and four-place, owned by the flood relief outfit are reported to be on call. Lists of available planes and pilots, including names, place, are compiled, and commissioners which could be selected by flood have been asked to pitch in for high ground emergency service.

Lightplane fleet headeds of bureau of rescue and supply who have in the 1948 flood, mostly inundated. The 1949 contributions are expected to make possible much greater efficiency of service.

INDUSTRIAL BENCH TWINS.—Birch Aircraft Corp. has made available to its dealers an catalog of firms owning private hangars. Headings showing some 45 different types of business users ranging from advertising companies to wholesalers of food and dry goods. Biggest contribution of the two Birch planes it found in the previous industry, which were over 100 of the executive transports, scattered among 80 firms.

Other range business users contractors and contractor companies, 19 firms using 28 planes, air freight and charter companies, 13 firms using 20 planes, individuals, 12 utilizing 13 planes, banks and building supplies, 12 firms using 13 planes, machinery manufacturers, 11 firms using 13 planes, machinery part manufacturers, 10 firms using 10 planes, oiling and textiles, 9 firms using 10 planes, publishing companies, 7 firms and 7 planes.

CROP SPRAYING.—REGULATION.—George Children, CAS, industry operations director, told a recent audience at a rural agricultural symposium at Kansas State College, Manhattan, Kan., that federal regulation of aerial spraying operations from an aircraft standpoint was not as practical or control over the general and aerial application by state departments of agriculture, together with an educational program teaching proper means of application.

Any national regulation would run into the problem of widely varying restricted requirements, Children said. He stated about legal responsibilities facing the operator for harmful effects of spraying to adjacent crops, and pointed out that judgments have already been entered against operators for such damage.

RONANZA STATION WAGON.—Moving in on the utility plane market is the relatively unknown station wagon version of the Birch Bantam, which has mahogany panelled cabin, quick removable rear seat, cargo tailgate steps and ring, special luggage on the passenger door which opens forward flat against the front legs, and spread side-latch litter arrangement.

Station wagon version is designed to carry two persons and 440 lbs of cargo, in one piece and 335 lbs cargo with a range of 370 mi., or can be used as a regular four-passenger.

MATLUND TO MICHIGAN.—Col. Lester F. Matlond has resigned his post as Wisconsin transportation director to accept a similar post in Michigan. Matlond takes the spot vacated last fall by resignation of Col. Fred Evans.

Since Evans left Michigan, Col. Hughie, chairman of the armaments commission has been handling as armaments director. Matlond's decision to leave Wisconsin was probably influenced by the failure of the state government to support him in his proposed airport development program. He had tried for a \$3 million two-year state airport program to match federal funds, but this was not to a major fund of \$300,000 by the governor, shortly before Matlond's resignation.

Matlond is probably best known for his part in the flight of Pan Am's 1927 flight to Timor from San Francisco, in company with mother Air Corps Lieutenant, Albert Brueggen, now a CASF major general.

—ALEXANDER MCGUIRE

AIR TRANSPORT

PAA Studying Super Skye coaches

Juan Trippe discloses plans for world-wide tourist class service at Stratocruiser christening in Washington.

Pan American Airways President Juan Trippe is counting on his fleet of 20 new double-deck Boeing Stratocruisers to speed the day when world-wide tourist-class air transportation can be offered at fares one-third or more below regular rates.

Speaking in Washington at the christening of the first Stratocruiser delivered to PAA, Trippe declared that it is not only an obligation but a matter of good business for Pan American to promote tourist air travel. He said that the airline has received the most requests of Pan American's 300 routes that by 40 percent, and then, for the first time, sufficient equipment will be available to provide low cost tourist class service to Europe, the Orient and South America.

Foreign Expansion Necessary. "There is no reason why a tourist-class air trip to Europe that full should cost

more than \$225 (\$405 round-trip), according to the PAA president. "That is our objective, and we will achieve it if the foreign governments consented to it. We are very hopeful that they will give us permission."

Carrying first-class New York-London costs a \$450 round-trip, although a special 10-day excursion fare of \$466.70 will soon be in effect this winter to promote off-season travel.

Trippe did not state specifically that PAA's \$1 million Stratocruiser, which can accommodate 75 passengers, would be used as a super-tourist plane. But company officials indicated that the carrier's newest and largest capacity is being considered for this type of operation.

PAA Study Underway. A committee of the International Air Transport Assn. has been studying the whole tourist class fare problem and will make recommendations this spring. The group was formed after a number of international carriers expressed support for coach service at IATA's annual conference in December last fall (Aviation Week, Dec. 6). Eastern data IATA approved several months ago could become effective in Oct. 1.

PAA's first Stratocruiser flew from San Francisco to Washington for the christening ceremony in 6 hr. 15 min. at an average speed of 155 mph. Shortly thereafter a second Pan American Stratocruiser made the trip in 6 hr. 12 min.

Hawaiian Service Soon. Target date for introduction of regular West Coast Honolulu-San Francisco service has been set for Apr. 1 according to PAA officials. A paving run on the Hawaian route was made only this month.

NAL Offers Stock To PAA and Grace

In a series of surprise actions, National Airlines has moved to strengthen its financial and operating positions.

The initial financial move was to sell W. R. Grace & Co., 174,000 shares of National stock at \$5.50 per share, apportioning current book value. A few days later, on the eve of the carrier's Civil Aviation Board probe on the company's route structure, it was asserted that 195,000 shares each have been offered for sale to W. R. Grace &

And for months the carrier has operated tourist class service from New York to Rio de Janeiro and Buenos Aires with 52 passengers DC-4s.

PAA passenger traffic between Puerto Rico and New York has tripled since introduction of the spacious open seats. The people want tourist class service, and it is here to stay," Trippe emphasized.

Stratocruiser Variable-Speed. George C. Carlson, PAA's chief sales manager, states that the 75-seat Stratocruiser can be used safely as an economy-class airplane, by removing all first-class seats. Triple class can be placed along one side of the cabin where double seats are now installed. "Thus the same plane that will handle the carriage trade in births and coin passengers can be converted readily to a fly-by-night carrying up to 114 tourist passengers at minimum fares," Carlson declared.

An "economy" type of high-density Stratocruiser loading is already used by the Midwest Air Transport Service. The YC-97B airbus double seats and shortening triple seats to accommodate 85 passengers.

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Co. and to Pan American Airways. It is presumed that the initial 174,000 shares acquired by the Grace interests were included in the offerings of 345,000 shares, the balance of 171,000 probably remaining under option. No consideration has been received as to method of accounting and price to be paid by Pan American.

Capitalization Increase. National Airlines now has one million shares of \$1 par value stock authorized and 749,937 shares actually issued. President G. T. Baker was last reported in early January 168,000 shares of the outstanding stock. It is evident that the issuance of the total 692,000 shares of stock contemplated will require an increase in the authorized capitalization. The sale and issuance of the initial 171,000 shares to Grace, however, was based on an issuance of the authorized capital increase.

It is believed that the combined 692,000 shares to be issued by Grace and Pan American interests will amount to about 46 percent of the revised authorized stock as compared with only less than 12 percent to be issued by Baker.

Shares Issued. Baker remains before the proposed stock purchase can be implemented. A voluntary cancellation will be a determination to be made by CAB whether effective control exists in the part of the new interests. Another question is the possible conflict, if any, that may exist between W. R. Grace & Co. and Pan American jointly own Pan American-Globe Airlines.

In recent years, there has been a divergence of views in Pan American by its two owners. Grace has expand its interest through the Miami airport for Pan American over the substantial objections of Pan American. A compromise on this issue was resolved by an agreement-interchange agreement between Pan American and Pan American Airways.

Should the present capital shift to National be approved, that carrier's interests will serve its important trans-Pacific. Based on the reduced book value, about \$4 million in new funds would be received by National.

Competitive Effects. Of greater concern, National would acquire participation in the trans-Pacific market from its own establishment at the New York and Miami gateways. This could place it in an improved competitive position in relation to Eastern Air Lines.

Completely isolated in the financial market, set the separate equipment-purchase agreement National and Eastern had with the Board. Under the proposal, the two carriers would operate under a through equipment arrangement over National's bases east of New Orleans and over Eastern's route west of that point.

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Canadian Pacific Air Lines is rapidly expanding its network of over 15,000 miles of new routes to Japan, China, New Zealand and Australia, shown above.

Canada: CPA Pushes Westward

Canada's transportation giant, Canadian Pacific Railways, is launching its flag-carrying expansion program to realize the international potential between by attracting more than 15,000 extra air miles on routes in the Pacific Ocean area.

Early this spring, Canadian Pacific Air Lines, subsidiary of the sprawling Canadian Pacific Railways empire, expects to begin its first passenger flights to Asia via the Orient. In summer, Pan Am will be in both of its Pacific routes at once when eastbound 6155 miles from Vancouver to Tokyo, Shanghai and Hong Kong via the Aleutian Islands; the second crossing 5594 miles from Vancouver to Sydney, Australia and Auckland, New Zealand via San Francisco, Honolulu, Curtis Island and Fiji.

Safair Operations. Canadian Pacific Railway parent company of CPA, describes itself as the world's greatest travel system. It not only operates a transcontinental rail system between Atlantic and Pacific oceans and around the world coastlines but also a chain of hotels in Canada and worldwide telephone and express facilities.

Canadian Pacific Air Lines does not operate transoceanically. But it links cities from the U.S. border to the bush routes in the north of the Arctic Circle.

For its transoceanic flights on the Asia-Pacific routes, CPA is leasing two



CPA President Gert McConaughay



60,000 TON MILES IN ONE LUMP

Perhaps not a record shipment, but large enough to fill into one a full-sized railroad car was this 10,000-ton ship rudderstock recently loaded aboard a Lockheed C-124 Globemaster at New York International Airport. The largest and heaviest shipment ever flown from New York International—the

for all transcontinental and international services originated in Canada. Only the government-owned Trans-Canada Air Lines would operate these routes.

CPA, as a subsidiary of privately-owned Canadian Pacific Railway, the largest railway in the Dominion, operated the service well, but it has a time there was plans to break up the CPA bus operations into the north country.

But the government changed its mind early in 1948. CPA had been busy enough to do with expansion of trans-Atlantic, West Indian and South American services, and it was natural that a trans-Pacific service come into being from Canada to Australia and New Zealand. CPA was given the job.

■**Bus Operations Acquired**—The Canadian Pacific Railway has been instrumental in aviation since at least 1918. But not until 1951 did the formation of the present CPA begin to take shape. That year, CPA acquired a large share of Canadian Airways Ltd., the Dominion's largest operator of northern transoceanic services.

Since 1951 CPA has been taking over small airlines, mostly operating in southern Canada. The last major acquisition for the profitable airline business has brought about closure conditions. By 1942, CPA had acquired practically all the air services in Canada except TCA, and two small airlines CPA was founded in 1942 and the various entities making up the system were undermined at much as possible during the war years.

CPA's services to small, far ports and tiny towns in the Arctic Circle can hardly be considered as the backbone of the northern and western Canada. Its role in this is to assist in forming a transcontinental service, a privilege enjoyed only by TCA. But CPA operates shorter flights, which make it a subdivided service.

■**Passenger Traffic Up—Last year, CPA carried 145,881 passengers, 7,889,513 lb. of goods, and 1,082,334 lb. of mail. In 1947, 124,720 passengers were flown by CPA, 10,577,571 lb. of cargo and 1,039,085 lb. of mail.**

The drop in cargo carried was not unexpected. In 1947, CPA did a major job of bombing an equipment for the new trans-Asian route in Indonesia. This work is now being handled by the mining company's own fleet of aircraft.

■**Equipment Changes**—When CPA took over the various airlines, it acquired 77 aircraft of every type from four companies. Today CPA has 47 aircraft, on its 970 miles of leased domestic routes and 17 DC-3s. Of 11 aircraft not acquired in 1948, 28 passengers, one Lockheed Lodestar, six air-supply Airstreams, five Lockheed Hudsons, four Consolidated

PBY-5A amphibians, four Northrop Nomads, and two Junkers-Germans. To these will be added the first Canadian Fokker for trans-Pacific operations.

■**Operations Center Shifted**—With activity in all parts of Canada, and some outside, such as the still growing contact in Venezuela and, last CPA operations center is located. Hence office at Montreal, with divisional operating and training headquarters at Vancouver, Edmonton and Winnipeg.

Today CPA is president of Canadian MacCannell, which also owns Yukon Airways. Started in 1939, and played a major part in developing commercial aviation in the Alaska Highway country. R. W. Ryan, executive director to McCannell, is a World War I veteran and pastured in commercial aviation in western Canada. Disengaged executives are all veterans, high pilots or transport flyers of World War II.

CAB May Raise Nonskied Safety Level

Nonskied and contract airlines using transport-type equipment are facing a further tightening of their operating rules to meet the required minimum level of safety still close to that of the subcontract carriers.

CAB announced this month that it had issued a proposed rulemaking under Part 42 of the Civil Aviation Regulations. "It is proposed to establish 'safe' operating standards in the inherent differences in subcontracted and nonskied operation permit."

Proposed new requirements could cause nonqualifying aircraft equipment, crew qualifications, maintenance and operating handbook for regular and irregular passenger carriage.

■**Some Changes Already Made**—About 400 transport-type multi-engine aircraft have been reclassified to those operated by subcontracted carriers now covered by regulations, according to CAB. The changes made in Part 42 have introduced many requirements for nonskied highly comparable to those for regular operators. This situation does not hold true in all respects.

The Board proposes raising from 80,000 to 12,500 lb. the weight which will distinguish between rules applicable to "big" aircraft and "small" aircraft. Applications for an air carrier operating certificate must now have the name of at least one standard (NCS) certified aircraft and no operator will be permitted to use a large aircraft for use type of service unless the plane has been specially inspected by CAB and found to be safe for the service to be offered.

■**Contact Carriers Affected**—CAB said that with the enacted proposal of more rigid safety requirements

for nonskied carriers the tendency to avoid regulation by engaging in joint purporting to engage in contract activities has increased greatly. The Board and contract operators, especially those involving large aircraft, do not differ materially in their safety aspects from common carrier operators.

But at present non-air carriers safety is governed by Part 43 of the Civil Air Regulations which was designed primarily for the private operator of small aircraft. A proposed Part 45 adds operating handbook, maintenance of aircraft certified for 12,500 lb. maximum blend weight or more, the same requirements applicable to common carriers operating similar aircraft as a nonskieded basis.

Certified carriers have complained separately that unclassified operators were not required to observe comparable safety standards. Air Transport Area President Ernest S. Landis charged recently that the unclassified lines (non-skied and contract) have a greater than thirty-five times to 15 times as high as that of the subcontracted operators.

SAL Rebuffed

Standard Air Lines, one of the major transoceanic subcontracted operators, should have the right of registration as an irregular carrier required for "knowing and willing" violation of the Civil Aviation Act, according to CAB Executive Director W. B. Boyd.

SAL, not only failed to carry on its services as originally intended therefrom, but was found guilty that the operations were violating the nonskied exception. Bryan declared: "Boeing, finding fit Standard has been with excessive frequency and regularly since June, 1947, the excesses and SAL had violated its obligations failed to make proper appeals to CAB on alleged contract flight which usually were common cause, strong, and failed to report an agreement with other nonskied to appropriate business from military personnel originating at Camp Shafter, California.

Boeing, on June 19, 1948, Standard temporarily lost route over 1,900 transoceanic flights in the past three years. Enclosed consists of telegrams to CAB. Last August, CAB ordered Standard's list of registrations suspended, but the move was blocked in the Federal courts.

■**Proposed Subcontractor Service**—In the New York City area has been set up by CAB for Mar. 21. East River passengers to enter route bids via Metro position Analysis Corp., New York Helicopter Corp., Air Consulting, Inc., and Island Air Forces, Inc.

Zimmerly Killed

Bert Zimmerly, 41, manager of Kenosha Air Transport, Cicero, Illinois, Wash., and founder and former president of Empire Air Lines, was killed shortly when his single-engine Convair crashed into a hillside near Pelham, Wash. The veteran Pacific Northwest pilot resigned in favor of Empire in the fall of 1946, and remained to lead base operations.

bearing on the aircraft has disclosed. Records showed that 24-H lbs of mail were inadvertently loaded onto the forward compartment of the craft before the 603-lb. scheduled for the forward compartment and the 1,000 lbs of the rear compartment.

The aircraft was en route to the unloading point for the 750-lb. the total load was 999 lbs. This was within the permissible gross instant weight for the S-51, but far enough of the load was forward.

The aircraft moved forward 6 ft to 8 ft, rose about 6 ft from the roof, and ascended as it descended down the side of the building. As the ship started a steep right turn, one of the rotor blades struck the roof. The helicopter collided with a left paragraph around the edge of the roof, rolling over and falling 6 ft to the street below. The pilot was killed.

Tudor IV Move

Great Britain's budget airline Tudor IV aircraft have been removed from scheduled commercial air service and will be modified for use on the Berlin airway, according to the Minister of Civil Aviation.

The move came after British South American Airways' Tudor IVs were grounded for the second time in less than a year (AVIATION WEEK, Jan. 31). In January, 1948, a BSA Tudor IV bound from Argentina to Berlin was reported to have suffered damage to one of its starboard engines. The morning ago, another of the five-engine craft operated by BSA disappeared with 20 persons on a flight from Barbados to Jamaica. Cause of both accidents remains a mystery.

Rationalized at the Tudor IV's from scheduled service toward BSA to carry on trans Atlantic operations, and the carrier's regional division in Argentina has gone to London for consultations on the apparent situation.

N. Y. Copier Service

Promoting confidence in trans Atlantic passengers preparing helicopter service in the New York City area has been born by CAB for Mar. 21. East River passengers to enter route bids via Metro position Analysis Corp., New York Helicopter Corp., Air Consulting, Inc., and Island Air Forces, Inc.

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House to Probe Mail Pay and Rates

The stage is set for an early spring mail rate adjustment by air carriers and air mail rates, raised by the House Post Office and Civil Service committee.

In two weeks, the committee, determine whether "industry" was prepared to increase should be separated from "prior" or "compensatory" payments decreasing whether air mail postal rates should be moved either upward or downward.

The inquiry will be one aspect of an overall investigation into the functioning of the Post Office Department, which, in the closing stages of Congress, showed a \$303,792,000 deficit in its operations carried on during the 1948 fiscal year.

House Committee Report—Meanwhile, the House committee on the Reconstruction of the Executive Branch, headed by former Postmaster General Houston, in its report on reorganization of the Post Office, urged that mail payments to carriers be compensated and that air mail rates be paid separately.

Observing that air mail rates are now set by the Civil Aeronautics Board "at a level to provide a subsidy in aviation," the Committee declared: "These subsidies may be most desirable. We are concerned, however, that the amounts of these subsidies should be paid to the Post Office by open appropriations from the funds and not repeated upon the Post Office and the mail carriers in the budget process."

"To make it easier," the Committee reported, "the Post Office, Civil Aeronautics Board, and the public may know what the amount of the subsidies are."

Canadian Head Agrees—Chairman Tom Murray (D., Tenn.) of the House Post Office and Civil Service Committee quickly endorsed the Houston report and issued a statement declaring: "We have unilateral, which require millions of dollars each year, should be subject to regular appropriations procedures and can be charged in full pay out of Post Office Department funds."

The Post Office and CAB were directed by Murray under recommendations from him for implementing the proposal to separate rates and subsidy payments. The difficulty, brought to light at hearings last year, is to determine a service and pay rates.

Former CAB Chairman James M. Landis pointed out at that time that a service rate would vary widely in the charge for different routes.

Bill Introduced—Legislators providing for separation of service and subsidy payments was introduced by Rep. John Kennedy (D., Mass.). While Kennedy's bill, CAB would not compensate mail

payment rates. The Post Office could appeal to CAB for rate reduction. CAB would also sue for subsidy payments applied by air carriers, and subsidies awarded would be paid from CAB funds.

In other Capitol Hill action, Postman General James Doolittle, in effect, recommended against an increase in air mail postal rates. His report to Congress projecting postal rate increases in almost every category, to increase revenues by \$333,373,300 annually, made no mention of air mail rates.

Post Mail Postage Cut Proposed—A decrease in the air mail postal rate from 6 cents to 5 cents an ounce was proposed in a bill introduced by Kennedy. However, there is some support in Congress for an increase in the rate than a decrease.

Air mail carriers would be opened to unrestricted air service by another bill introduced by Rep. John Kennedy. The Postmaster General, however, would be authorized to let contracts for large shipments of air mail to nonmailers as well as certified carriers where a saving in cost would result.

UAL Not Interested in Super DC-3

United Air Lines President W. A. Patterson has declared flatly his company does not believe in the economics of operating the aircraft. He has also denied that United is not interested in the much-debated "Super DC-3."

Speaking in San Francisco following a directors meeting, the UAL executive expressed doubt that CAB would favor nonrestricted coach operation at all business completely and suggested that if the airline lines were given more freedom than them, then perhaps costs might force them into bankruptcy.

Patterson and UAL personnel had made "shopped flights with the 399 passengers and maximum load," found only about \$500 more than United. He added, however, that "on behalf of United's shareholders I am authorized to fight destructive competition whenever I find it."

Plan to Super DC-3—Patterson's statement on the Super DC-3 was especially significant because his company operates about 75 conventional DC-3s—more than any other U. S. airline. He indicated that if modifications must be made in the DC-3s to keep them in service, United itself would do the work. Looking into the future, Patterson predicted that United and other carriers would be turning jet passenger transports within the next seven to ten years.

In Patterson's opinion, the domestic

air transport industry has bottomed in November, 1948, "and from an investment standpoint should show nothing but improvement from now on."

The optimistic view was expressed several days ago. CAB allowed to cover UAL's 1948 mail pay of \$2,497,000. Prior to the Post's action, United had shown a systemwide net loss of over \$4,680,000 for 1948.

SHORTLINES

Alaska Airlines—Reports 5152,426 acre-feet for year ended Oct. 31, 1948, which adjusted air fare of \$651,230 for previous fiscal year. Board Chairman R. W. Macdonald states the carrier was in the black for the three months ended Jan. 31, 1949, compared with a \$2,675 loss for the same period of the previous fiscal year.

American—Its latest delivery on 73 of carrier's total order of 125 is Canva-Liner. Only three of the carrier's DC-3s are still in passenger operations between Chicago and Milwaukee, Wis., and between Fort Worth and El Paso, and these will be retired in favor of Convair Liners starting April 1. All first track delivery on DC-3s in June, 1948, was the first carrier to receive the aircraft.

Bonwell—CAB has advised to extend the carrier's 95-seat plane male trooper mail route to the new service area east beyond Lima, Peru, to La Paz, Bolivia, and Rio de Janeiro, Brazil.

Continental—Has asked CAB for a certificate amendment to permit service from Tulsa and Oklahoma City to Tulsa, Wash., via Ashland, Okla., and Sherman, Texas. Tex Cox financial and Central Airlines, a holder authorized to serve these points in the Board's Tulsa-Oklahoma decision in November, 1946, is still inactive and probably will not commence operations unless its certificate is reinstated in May, 1949.

Florida Airlines—Has asked CAB to acquire Southern Airways to merge with Florida, Florida and Southern transients agreed to a consolidation but September but broke off negotiations and has refused to enter into them. Southern hopes to activate part of its dealer network in Fla. CAB has stated it will not extend Florida's short-haul certificate beyond May 20.

Northwest—CAB has suspended pending a hearing a NW's tariff providing increased capacity charter operation from which would be 150 percent of regular revenue base. The air mail rates proposed against the new rates, which began to become effective Mar. 1.

Panama—Its air passenger base be-

Memo from AIRPORT DEPARTMENT PRATT & WHITNEY AIRCRAFT



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CONTINENTAL



ENGINES

between North and South American ports.

Suddeutsche Airlines System—Has asked CAA to extend its trans-Atlantic license to include Berlin to achieve its goal of linking Berlin, Germany, as a point between Moscow and the Soviet Union, Moscow and Peking, Soviet Russia.

Statistical & Western-producing countries on the committee required for an international air-safety certificate has been scheduled for Mar. 10. CAA and SAV's request that its certificate be consolidated by having with the Pan American-Ameri-American Overseas Airlines merger case.

Swissair-MVA—Is to make DC-8 service between New York, Zurich and Geneva around May 1.

Tam-Pac—Is to reorganize its newly constituted Hawaiian-based service in Jan. 1, with four DC-3s. Company's president is to have a personal income of about \$10,000 per month.

United-Brazil—Is to disperse its extended to Dec. 31, 1951, the option of UAL. President W. A. Patterson is to purchase 2007 shares of authorized, but unissued common stock at \$11. A short Stock review has been acting at around \$12.50 a share.

Wisconsin Central—President Francis Higgins sold a Wisconsin legislature House committee recently that his company might have to stop operations in the state unless the state comes to the aid of urgent development.

CAB SCHEDULE

Mar. 18—Published confirmation of application for Type and Other Airline Certificates.

Mar. 18—Continued in assessment Marquette Yacht Club, Milwaukee, Wisconsin, (Docket 948-102, et al.)

Mar. 18—On Board Inspection, International Air Transport Association, Chicago, Illinois, (Docket 1000-102, et al.)

Mar. 18—Published amendment to Part 103, Subpart C, "Prohibited Activities," (Docket 1000-102, et al.)

Mar. 18—Starting on Board Inspection, Board of Trade, New York, New York, (Docket 1000-102, et al.)

Mar. 18—Published confirmation on Marquetee & Wisconsin Airlines request for issuance of an air carrier certificate. (Docket 1000-102, et al.)

Apr. 1—Published response Board of Trade, New York, New York, (Docket 1000-102, et al.)

Apr. 1—Starting Board Inspection, Board of Trade, New York, New York, (Docket 1000-102, et al.)

Apr. 1—Starting an additional inspection, Board of Trade, New York, New York, (Docket 1000-102, et al.)

Apr. 1—Starting on Board Inspection, Board of Trade, New York, New York, (Docket 1000-102, et al.)

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LETTERS

Manpower Shortage?

In a recent issue of *Aerospace Week* it was mentioned that if energy (if not) for the resurgence of today's intercontinental air travel. I refer to the item on the labor shortage.

Some time during the period of 1941 to 1945, while engaged in the Pacific War, I had a conversation with a survey of ALL, scientific and engineering personnel, made by a government committee.

If the aircraft industry is short of draft men, as you claim, then why didn't they call them up to the front lines, as did many others? Or can it be that the members of the industry do not know of the nature of this need?

Also, why doesn't the military check on numbers of engineers and conduct them?

I know many who wanted to be in the service, but who were dropped, and they were concerned about this.

There are plenty of men who would go back to service conscious of their own safety.

I know of two long island plants that these same applications show on, yet they will probably put that off as a long time away. I would like to know if you expect men to stay out of work for months till some personnel man makes up his mind? Or do they expect men disgusted with waiting and having taken other jobs to leave time and pay running around to plants at the pleasure of some personnel manager?

These are the things that does most sway from the overall industry. If the military needs men, let them check up on the math of their personnel man and let them recruit their future employees.

I trust you will print this letter as a guide to the industry.

WILLIAM H. MORRIS
T.S.C. Products Inc.
Brooklyn 5, N.Y.

opportunity to be offered at the loss of CAA (which is described in prior comments above). This applies, should we meet performance requirements for the long-haul transports and could be another factor for delays very considerable before this point, as on the trans-Pacific. Consider also, to me, an opportunity for an import as flight schools can be well appreciated by anyone who has studied our C-122 and C-123 aircraft designs.

For the Mason Committee's short lead time, rapidly design and prepare we propose the C-122, which we recognize will be the preferred aircraft for the long-haul. The plane will be completely similar in extreme appearance to the C-121, which you have described. However, this model will have a longer fuselage, 120 square feet wing area, and be powered by two Pratt & Whitney R-2800 engines. The advantage of this aircraft will be considerably better than the C-123.

Our design proposal for the C-121 is given, based on a redesign of our CG-14X glider which can be powered by Pratt & Whitney R-2800 engines. The anti-dramatic performance of this craft and its operational economy, would meet the Committee's requirements and lesser classified other requirements.

W. F. KENNEDY Executive Engineer
Cessna Aircraft Co., Inc.
Wichita, Kansas



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Poor Instrument Pilots

I am a subscriber to your magazine and I have seen the effect poor pilots have in bringing about improvements in the aviation industry . . .

We all know who hold amateur ratings, but we also see no excuse, personal, political, or just plain personal, to demand knowledge, knowledge of changing procedures, etc.

As the regulators now stand, most a pilot has an amateur rating, and that is the best way to identify someone, but optimistically believe that we are over the hill and have made a place for ourselves in development and innovation of some excellent aircraft.

On the subject of cargo and freight operations, which are being developed on the大陸, I wish to comment on your *Aerospace Week* page on "Techno-Cart." Also in Jan 3 issue. We have had several with kind interest, the Intermodal Council! Council prototype cargo aircraft development program.

We are not adverse to preliminary design for aircraft, as such, at the three categories discussed. We propose, for the aircraft to capacity cargo transport, a modification of our C-121 which is scheduled to fly before this coming summer. This aircraft would be powered with two R-4360 engines and would be similar to external

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STRICTLY PERSONAL

ANOTHER AIR FORCE MERCY MISSION—A few hours after many Southern California was buried under its last snow storm in history, Lieutenant David Callahan, CIO/CIO's enterprising public relations chief, received a bulky package from Washington, and set special delivery. It was from Maj. Gen. H. M. McClelland. Inside was the famous manual, "Survival Is The Answer." The General attached a cryptic note: "Hope this sends you in time."

Callahan saved the book conspicuously, that nothing as he presented it at the local chapter of commerce meeting.

ERRATA DEPARTMENT—Typographical and human errors made and with some Edits in this industry than the Aviation Week still applies. One of our engineering edition was pop-upped as he watched a short sequence in Curtis Wright's promotional movie the other day. An enterprising Lowell Thomas regaled us with the war record of the Curtiss Hellhounds, the sound doggedly wound through a shot at a Douglas Destroyer formation rolling over into a dive. Fortunately, the old Wright Cyclones were showing up on the Boardroom And Washington's NBC television station was swamped with telephone calls the other night after a caption labeled the Air Force's big Andover Field Presidential press with "Army Shows Us An Avair" the same day Curtis Wright began distributing brochures to the public describing the virtues of the T-22 trainer to be used by the Army Air Forces.

BITS ABOUT PEOPLE—Deck Borchert's composition of child hellos at off the press after a long delay due to a copyright and tax. Warren Smith, Fairchild's Hugostrous PRO, did the editing. Some National Press Club members who can advance copy must it's a collector's item.

Date Assistance, PRD of

Northeast and TWA, has gone to England as European public relations director of Pan Am, Cox and Hubbard International advertising. Thomas J. Daigan, Jr., ex-publicity chief of American Airlines has been elected vice-president/public relations of Champaign & Dixie RR. He is also president of the Robert R. Young regional Federation of Railway Engineers. The N. Y. World Telegram however says, "There's no easy way to lead out how much and outstanding a tool, but, anyway, the library of Eastern Airlines' warehouses several new issues on its shelves, including a copy of 'The Fascinating Railroad Business'."

C. Bedford Morris, former president of PGS, is president of United Service Associates, Inc.

Washington firm specializing in company representation, industrial engineering and public relations.

Rosey Col. III later last year, 1947, in book on his last and meeting old friends in New York again. He was recently with Curtis Wright and National Airlines.

Lou E. Sando has resigned as sales manager of Beverly Aircraft Corp., to take a three or four months vacation, but was addressed to him at Beverly will be forwarded.

ALDRO A HAIR SHIRT FOR WILSON—Gill Robb Wilson, the Herald Tribune's well known cartoonist and regular reporter of the Air Force's events in Asia, has been given a hair shirt. The artist claims that the virtue of his white pants and the red belt was wearing for six days, with the result of a rapidly melting. According to Bob Bohm, Pan Cook of Scamp-Broward researched recently that it was lucky Col. Gill had his hair cutting at Jadavpur when the monsoon forces disengaged all along in the neighborhood. A few months later the XB-47 would have a JATO fit for that was nothing round the crowd. "Aerospace," according one of Gill's pleasant compositions, Gill went right a hand trying to wrap up a hot pepper to prevent a strip tease.

MAKING UP FOR THE NO-SHOW—John Gathorne, who engages in press agency for American Airlines at Los Angeles, tells us Schlesinger says one

"A sheep and his dog to the J. A. Airport is a rare world, BUSH! THIS DOG EXPERT CITING. But before the plane time the canopies had collapsed and the London saw the iconic passenger perched under the original winging TOO LATE."

LET CAR RULE ON THIS ONE—Bill Key of AIA reports that Midwest Air Lines Executive Vice President Ray Wilson got into a policy conflict should he want to Washington for a ruling by CAB. They transported a young man from a Colorado ranger from Grand Junction to Denver and the airline executives couldn't decide whether to charge off air or bill him.

WHAT'S NEW

New Books

"The Air Officer's Guide," edited by Military Service Publishing Co. A new edition of the standard Army Officers Guide, especially for Air Force officers. Published by the Military Service Publishing Co., 1000 Telegraph Blvd., Harrisburg, Pa. Price \$3.50.

"Aviation Dispatcher Rating," by Charles A. Zwing, including analysis, chart questions and answers for the aircraft dispatcher rating. Lithographed, published by Pan American Navigation Service, 12201 Veterans Blvd., No. Hollywood, Calif.

"The Welding Encyclopedia," by T. H. Johnson, the complete story of welding, including 1200 terms, photos and figures, tables, 90 pages of trade names, and 16 data charts. 5th edition, 1000 pages. Published by The Welding Engineers Magazine, 131 West 42 St., New York 18, N.Y. Price \$5.50.

Yearbook Data

Residing among the Feb. 25 "Inventory of U. S. Air Power" of Aviation Week is a permanent reference to which reference is required to make the following changes:

PAGE 34, first column, line 16—Designation of the Republic plane should be F-84.

PAGE 15, photo at upper left—Caption should read, "McDonnell F2H-1 Banshee."

PAGE 46—Later information on that current code for Boeing XB-47, now in use, for Convair Vought XFTU L-18.

PAGE 28, table on "U.S. Air Force Industry"—Employment at East Hartford plant of Pratt & Whitney Aircraft division of United Aircraft Corp. is 15,146, making total employment of plants listed 199,495.

PAGE 40, new master photograph on left is Douglas D-558B, plane on right is Douglas D-558A.

PAGE 12, photo at upper left—Caption should read, "Fokker Fruimotor (Netherlands)."

PAGE 330, table at top of page—Denominator unit figure should be 1948, reading 1939. Value is now being changed.

PAGE 130, first line of note on the engine table—Should read Joe May horsepower for military only.

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EDITORIAL

The Air Force Secretary

With the appointment of a new Secretary of National Defense, the No. 1 question in the aircraft industry is Will Secretary Syringon remain?

There are those in Washington, "in high circles," who will tell you yes, and many more say no. But we hope Stuart Symington is permitted to carry on with his job as our first Secretary of the Air Force. So far, as the evidence we have seen, he has turned in a remarkable performance of organization and building an Air Force on the basis made possible by the separate Air Force legislation. And his relations with the public and Congress have been outstanding. He is highly thought of on Capitol Hill.

Mr. Walter Lippmann, the eminent columnist, put it very well last week when he wrote that Mr. Syringon, during the period when he continued to urge a 75-Congress Air Force last year, against Forrestal's declared policy, "was clear, forceful, and unshakable by doubt."

Aerospace aeronauts who are clear, forceful, and unshakable by doubt, and so far we, like Mr. Lippmann, think Mr. Syringon is one of these men.

Better Lightplane Merchandising

The light airplane industry doesn't know much about John Lawler yet, but they won't be hearing more about him.

Aerospace Aircraft Corp.'s present came from Curtiss-Wright, where he was controller for the Airplane division. He has a rather hard-boiled attitude toward profit and loss.

Lawler is relatively optimistic about the future of the lightplane business. He is already producing excellent aircraft and he intends to improve them steadily with the development of the art.

But he is not so foolish with the sonsece of aircraft that he will rule the life of his company by turning down non-aircraft manufacturing business. Actually, he has been his company's star salesman. He has already shown the Air Force that Aerospace can manufacture such needed items as ground maintenance stands for four-engine aircraft, and high priority combat equipment like rocket launching devices for bombers. Already, as Mr. Lawler's short span as president, Aerospace has completed, or has on the books, military contracts totaling \$1.5 million and at least as much more is expected this year.

Primarily because of the success of Aerospace's non-aircraft contract history, and its prospects for more, the Reconstruction Finance Corp. is seriously considering the company's loan application.

Lawler admitted to us last week, as we visited with him and other company executives at Middletown, Ohio, that he has heard rumors from some other aircraft

industry executives because he has launched an aggressive non-aircraft manufacturing program.

Lawler believes his first obligation is to his stockholders. That means laying his company and its personnel in the process. If he can do that, even strengthening the company in the process, he feels he is insuring the private lightplane firm in a healthy condition until the private aviation business improves. This in itself is a service to the lightplane industry.

Some of his ideas on the up-plied business are provocative.

Yearly models are out. He will make steady improvements in production techniques but he feels that in the present state of personal aircraft sales, "new" models are usually not new models at all, and their advertising is such that sales of current models is much as it is repeat sales of new ones.

Like several other plane makers, Lawler will refuse to build any plane that is not sold before it starts down the assembly line.

Lawler believes there is something radically wrong in this lightplane merchandising and selling business. He estimates currently that Aerospace has about 33 distributors and 1400 dealers. In 1948 Aerospace delivered a grand total of 599 planes. That is about a third of a plane per dealer per year. Piper Aircraft Corp. has about 1900 dealers, and sold a total of 1479 planes last year.

What kind of a dealer is it who cannot average one plane a year, Mr. Lawler asks? Why is an aircraft manufacturer justified in running up any kind of expenses on such a dealer?

Furthermore, the dealer word is even blander than reflected above because many of those 1948 "solo" sales are not sales to the public at all. The dealers bought hundreds of those ships for their own fleet base use.

So Lawler is about to put Aerospace's distributor system through the wringer to shrink it down to a size comparable to today's sales. He expects the distributor to wing the water out of their dealer system. The result should be a smaller, more efficient sales organization. Each distributor or dealer will have a large enough territory to give emphasis to real selling.

Lawler realizes that part of the problem is a depreciation of dealers. Many operators have several dealerships, or lines which are at least partially compatible. But competition in their area is weak, little sales effort is expended because no matter which lightplane that occasional customer buys, the dealer will be cut in. Aerospace hopes to make the temperament of the typical aircraft dealer a little

"The world owes me a living" has been heard for so long in personal aviation that Aerospace's audacious thinking and energetic drive for new business is a refreshing contrast.

ROBERT H. WOOD



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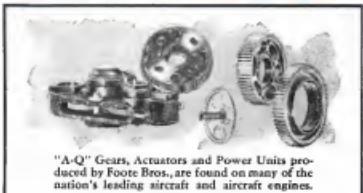
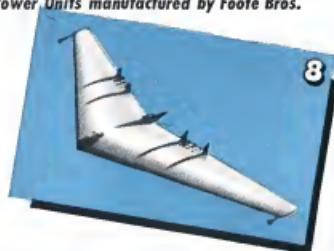
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